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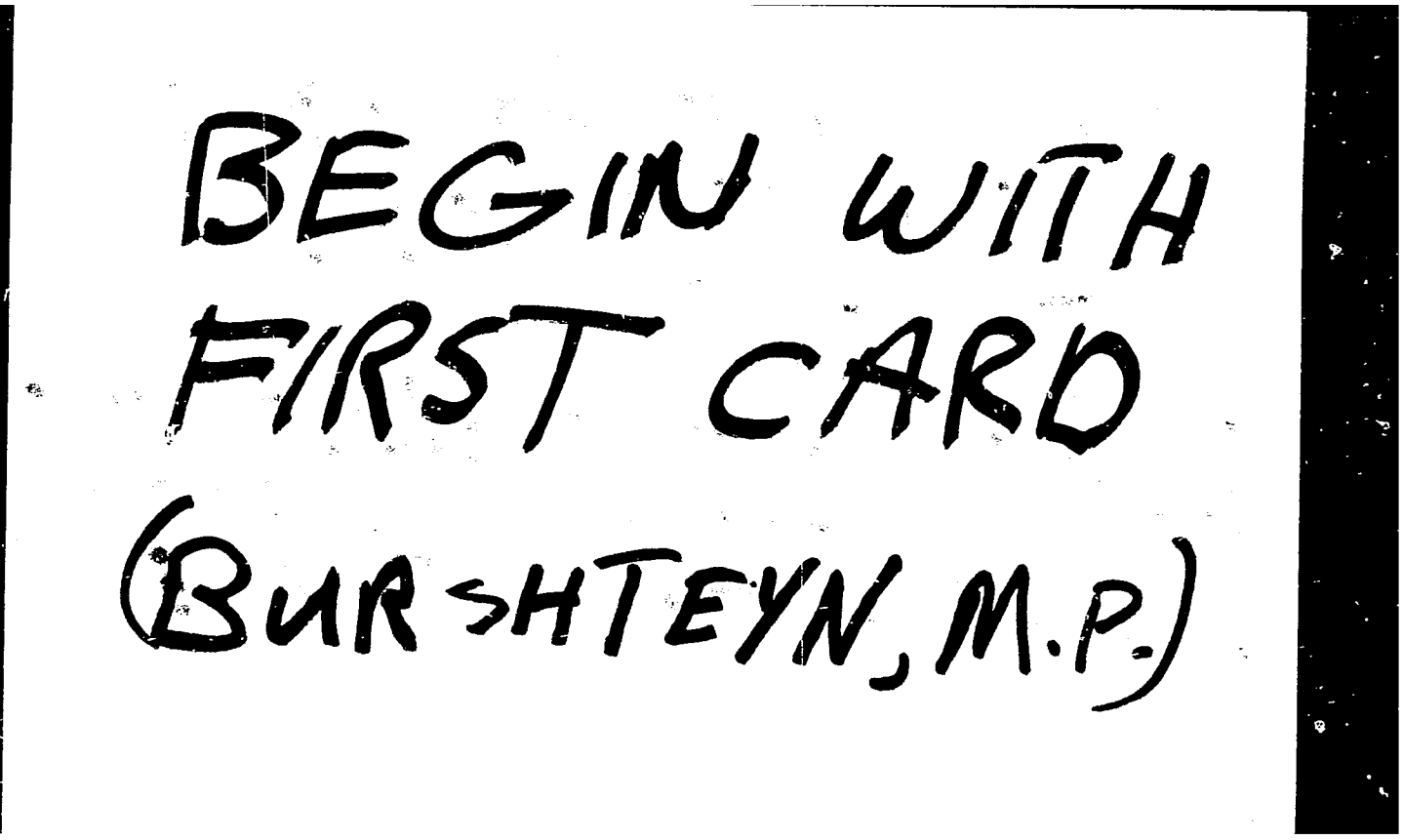


BURSHTEYN, M.P., gornyy inzh.; SEINOV, N.P., gornyy inzh.

Using borehole charges divided by air spaces in strip mines of the Altyn-Topkan Combine. Vzryv. delo no.54/11:257-265 '64. (MIRA 17:9)

1. Trest Uzbekvzryvprom (for Burshteyn). 2. Institut gornogo dela imeni Skochinskogo (for Seinov).

BURSHTEYN, M.P., inzh.; MIKHAYLENKO, M.V., inzh.; SETAROV, F.S., inzh.; TSOGOYEV, N.A., inzh.

Use of "igdanit" in composite chamber charges. Vzryv. delo no.51/8:133-143 '63. (MIRA 16:6)

1. Uzbekvzryvprom.
(Explosives) (Blasting)

LEONENKO, I.A., prof., red.; SHELEST, L.A., kand. tekhn. nauk, red.; BUNIN, A.I., retsenzent; BURSHTEYN, P.S., retsenzent; KAPITANOV, T.V., retsenzent; KUZ'MIN, A.V., retsenzent; TARASOV, L.Ya., otv. red.; KOVALEV, I.A., otv. red.

[Development of mineral resourses in Eastern Siberia] Razrabotka mestorozhdenii poleznykh iskopaemykh Vostochnoi Sibiri. Moskva, Nedra, 1964. 382 p. (MIRA 17:12)

BURSHTEYN, P.S.

Operations of the "Sakhalinugol'" combine. Ugol' 33 no.10:27-29 O '58. (MIRA 11:11)

1. Nachal'nik kombinata Sakhalinugol'.
(Sakhalin--Coal mines and mining) (Mine management)

STREL'NIKOV, Dmitriy Aleksandrovich; KOZHEVIN, Vladimir Grigor'yevich; GORBACHEV, Timofey Fedorovich; SHELKOV, A.A., gornyy inzh., retsenzent; BURSHTEYN, P.S., gornyy inzh., retsenzent; LINDENAU, N.I., gornyy inzh., otv.red.; OKHRIMENKO, V.A., red.izd-va; ALADOVA, Ye.I., tekhn.red.; KOROVENKOVA, Z.A., tekhn.red.

[Mining of Kuznetsk Basin coal deposits] Razrabotka ugol'nykh mestorozhdenii Kuzbassa. Moskva, Ugletekhizdat, 1959. 886 p. (MIRA 12:1)

(Kuznetsk Basin--Coal mines and mining)

BURSHTEYN, R.I.

Screw conveyers for processing leather by the use of liquids.
Leg.prom. 16 no.4:49-52 Ap '56. (MLRA 9:8)

1. Nachal'nik tsekha rizhskogo kozhevennogo zavoda "Is'getsiyems".
(Riga--Leather industry--Equipment and supplies)

BURSHTEYN, R. KH.

USSR/Chemistry - Catalysts May 53

"The Question of the Surface of the Promoter Deposited on the Carrier," R.Kh. Burshteyn, Inst of Phys Chem, Moscow, Acad Sci USSR

Zhur Fiz Khim, Vol 27, No 5, p 765

The author refers to work by G.K. Boreskov and A.P. Karnaukhov criticising procedure for detn of the surface of Pt on C acc to method developed by the author himself (R. Kh. Burshteyn), P.I. Levin, and S. M. Petrov. States that Boreskov and Karnaukhov, utilizing data based on detn of the surface on Pt on silica gel, concluded that the

273T21

author erred by 15% in detg the surface of Pt on C. Adds that data which apply to silica gel do not necessarily apply to carbon.

273T21

BURSHTEYN, R. Kh.

Jan '53

Electrochemistry

The influence of oxygen absorbed at high temperatures upon the electrochemical behavior of platinum. T. V. Kalish and R. Kh. Burshtein. *Doklady Akad. Nauk S.S.S.R.* 88, 863-6(1953); *cf. C.A.* 46, 3838*d*.—The penetration of O into heated Pt was studied by detg. the quantity removed by cathodic polarization. A Pt electrode (20 sq. cm. area) was sealed into a quartz chamber which permitted degassing at 1000°. A known quantity of O (12.4–80.4 × 10^{15} mols. of O/sq. cm. apparent area of Pt) was then absorbed at 850, 800, or 450°. Larger amts. (unmeasured) were also absorbed at 0.5 atm. After cooling, degassed electrolyte was added by breaking an ampul. The potential was measured vs. a H electrode until a stable value was reached. A cathodic current of 2 × 10^{-4} amp. was then applied, and the time for the potential to drop to zero was used as a measure of O removed (0.66–6.4 × 10^{15} mols. of O/sq. cm.). The former quantity corresponded to a monolayer. A distinct plateau occurred in 1*N* H_2SO_4 at 0.6–0.7 v. but did not occur in 1.42 *N* HCl. Upon interrupting the cathodic polarization in H_2SO_4 soln., the potential rose fairly rapidly to 0.6–0.7 v. Repeated polarization with periods of interruption was found to remove O gradually issuing from deeper layers of the metal. After 4 polarizations, 2.51 × 10^{15} O_2 mols./sq. cm. were removed after absorbing 36.5 × 10^{15} mols./sq. cm. at 852°; similarly, 4.85 × 10^{15} mols./sq. cm. were removed after absorbing 89.4 × 10^{15} O mols./sq. cm. at the same temp. In several cases, an increase in length of the potential-time plateau was noted after an interruption of several hrs. This was interpreted as a gradual penetration of micropores of the surface by electrolyte. O absorbed at higher temps. required a longer time for removal.

R. D. Misch

BURSHTEYN, R-Kh

~~BURSHTEYN, R.~~, Kh,

USSR/Metals - Iron, Oxidation 11 Mar 52

"Interaction of Iron With Ozone," R. Kh. Burshteyn, N. A. Shumilova

"Dok Ak Nauk SSSR" Vol LXXXIII, No 2, pp 251, 252

Studies formation of oxide films on iron in presence of ozone, thickness of film being found by detg amt of hydrogen required for reduction of oxide film. Concludes that there is no significant difference in mechanism of protective film formation during reaction of iron with either ozone or oxygen. Oxide film formed in presence of ozone is thicker than that formed in presence of pure

214T65

oxygen at 190°K, but is of same thickness in range of 290-430°K since, when temp is rising, decompn rate of ozone is greater than rate of its reaction with iron. Submitted by Acad A. N. Frumkin 21 Jan 52.

214T65

BURSHTEYN, R. Kh.

USSR/Chemistry - Oxide Films Apr 52

"Oxide Films on High Alloy Steels," S. D. Levina, R. Kh. Burshteyn, Inst of Phys Chem, Moscow, Acad Sci USSR

"Zhur Fiz Khim" Vol XXVI, No 4, pp 555-559

Eliminated oxide film from Cr-Ni steel by reduction with hydrogen. Established that adsorption of oxygen at room temp on the sample in question was 1.6 times lower than on pure iron. Increase of adsorption of oxygen on steel with increased temp is considerably less pronounced than on pure iron.

217T29

BURSHTEYN, R. KH.

PA 48/49T20

USSR/Chemistry - Hydrogen Peroxide — Jan 49
Chemistry - Oxidation

"Study of the State of Oxygen Adsorbed in Carbon According to Its Ability to Form Hydrogen Peroxide and Water," R. Kh. Burshteyn, N. B. Miller, Inst of Physicochem, Acad Sci USSR, 7 pp

"Zhur Fiz Khim" Vol XXIII, No 1

Discusses experiments by Kuchinsky, Burshteyn and Frumkin on adsorption of electrolytes at various potentials of carbon electrode, and mentions recent published work by Winslow on investigation of the process of $FeSO_4$ oxidation

[redacted] 48/49T20

USSR/Chemistry - Hydrogen Peroxide (Contd) — Jan 49

in presence of acid. Describes own studies on adsorption of sulfuric acid in relation to quantity of adsorbed oxygen, which showed that an equivalent correlation is observed between adsorbed oxygen and the acid even in presence of small quantities of oxygen. This conforms with data obtained by Frumkin and Lavrovsky. Gives tables on adsorption of sulfuric acid. Submitted 27 Apr 48.

[redacted] 48/49T20

BURSHTEYN, R. KH.

PA 11/49T13

USSR/Chemistry - Iron, Passivity of Jul 48
Chemistry - Passivity, of iron

"Passivation of Iron With Gaseous Oxygen," N. A. Shumilova, R. Kh. Burshteyn, 4 pp

"Dok Ak Nauk SSSR" Vol LXI, No 3

Mechanism of anode passivation of iron in dilute solutions, after preliminary action on it by gaseous oxygen, was studied with allowances made for temperature of adsorption and anode oxidation. On basis of data obtained, a different mechanism of passivation of iron with gaseous oxygen is postulated, as compared to passivation upon anode

[redacted] 11/49T13

USSR/Chemistry - Iron, Passivity of (Contd) Jul 48

oxidation, possibly because oxygen adsorbed from gaseous phase differs in properties from that adsorbed in course of anode polarization. Submitted 25 May 48.

[redacted] 11/49T13

BURSTEYN, R.

PA 54T43

USSR/Electricity
Oxidation
Electrodes

Sep/Oct 1946.

"Adsorption of Oxygen on Iron and Influence of Adsorbed Oxygen on the Behavior of an Iron Electrode," R. Bursteyn, N. Shumilova, K. Golbert, Karpov Inst Phys Chem, Moscow, 20 pp

"Acta Physicochimica URSS" Vol XXI, No 5 p.789

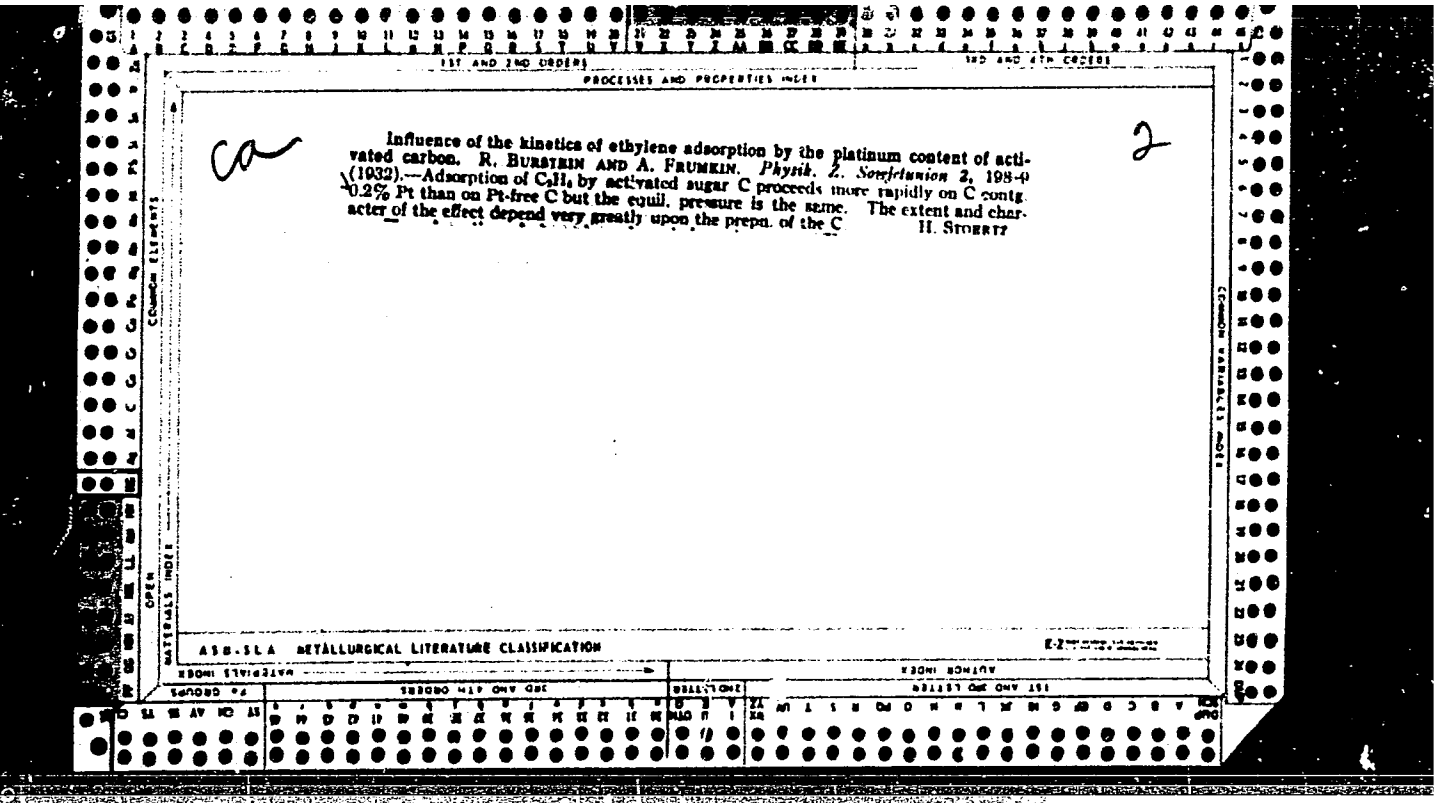
This paper has as its objective quantitative study of influence of adsorbed oxygen on passivity of iron during its anodic oxidation. Adsorption is investigated at low pressures in temperature range 90-473° K. When oxygen is adsorbed to amount of $2x10^{15}$

54T43

USSR/Electricity (Contd) Sep/Oct 1946

molecules per sq cm, the electrochemical activity of iron electrode is retained, and upon adsorption of $4x10^{15}$ molecules per sq cm, complete passivation results. If oxide film were not removed by anodic polarization, amount of oxygen needed would probably be much less. Received, 15 Nov 1946.

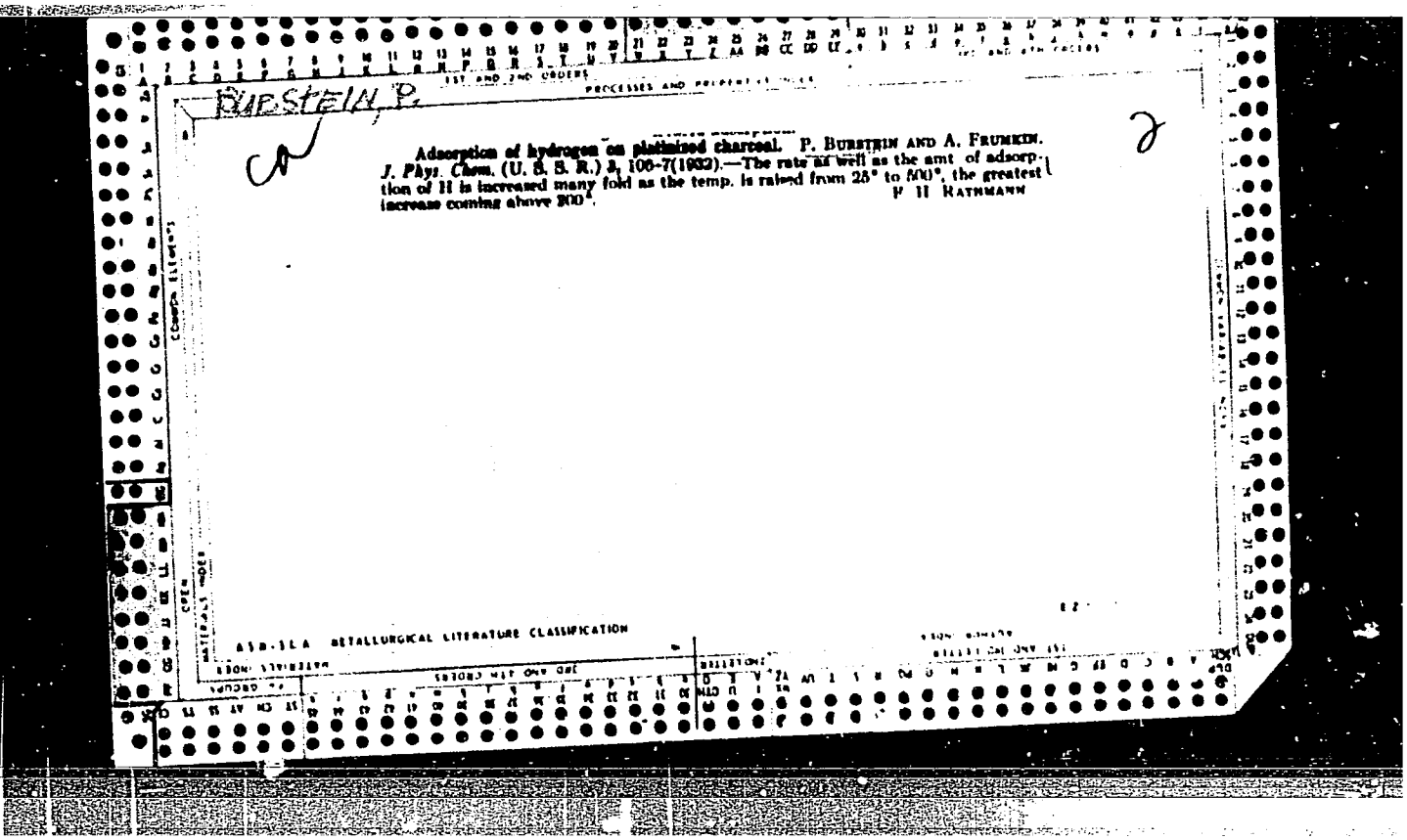
54T43



PROCESSES AND PROPERTIES INDEX

Influence of the kinetics of ethylene adsorption by the platinum content of activated carbon. R. BURSTEIN AND A. FRUMKIN. *Physik. Z. Sowjetunion* 2, 198-9 (1932).—Adsorption of C_2H_4 by activated sugar C proceeds more rapidly on C contg. 0.2% Pt than on Pt-free C but the equil. pressure is the same. The extent and character of the effect depend very greatly upon the prepn. of the C H. STOBBE

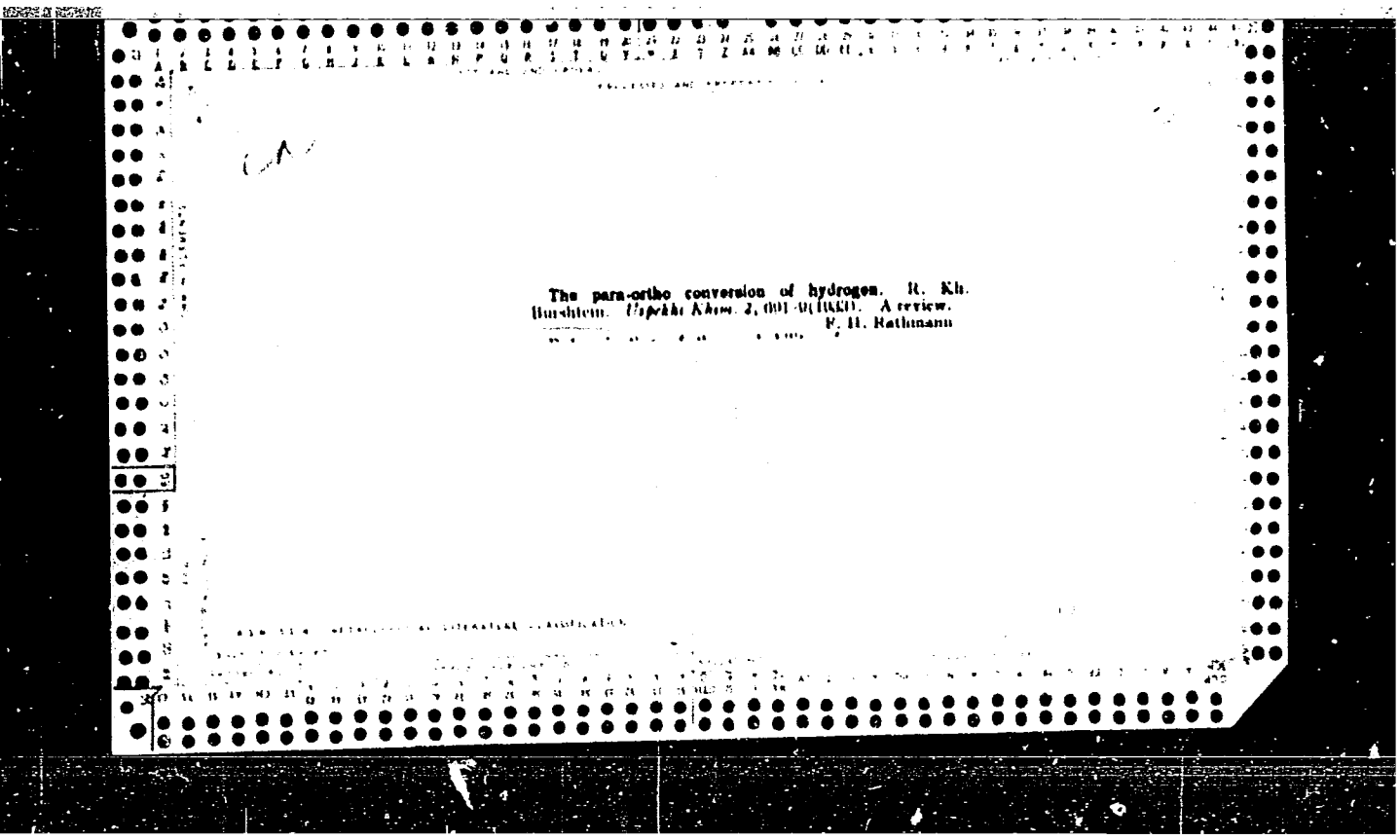
ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION



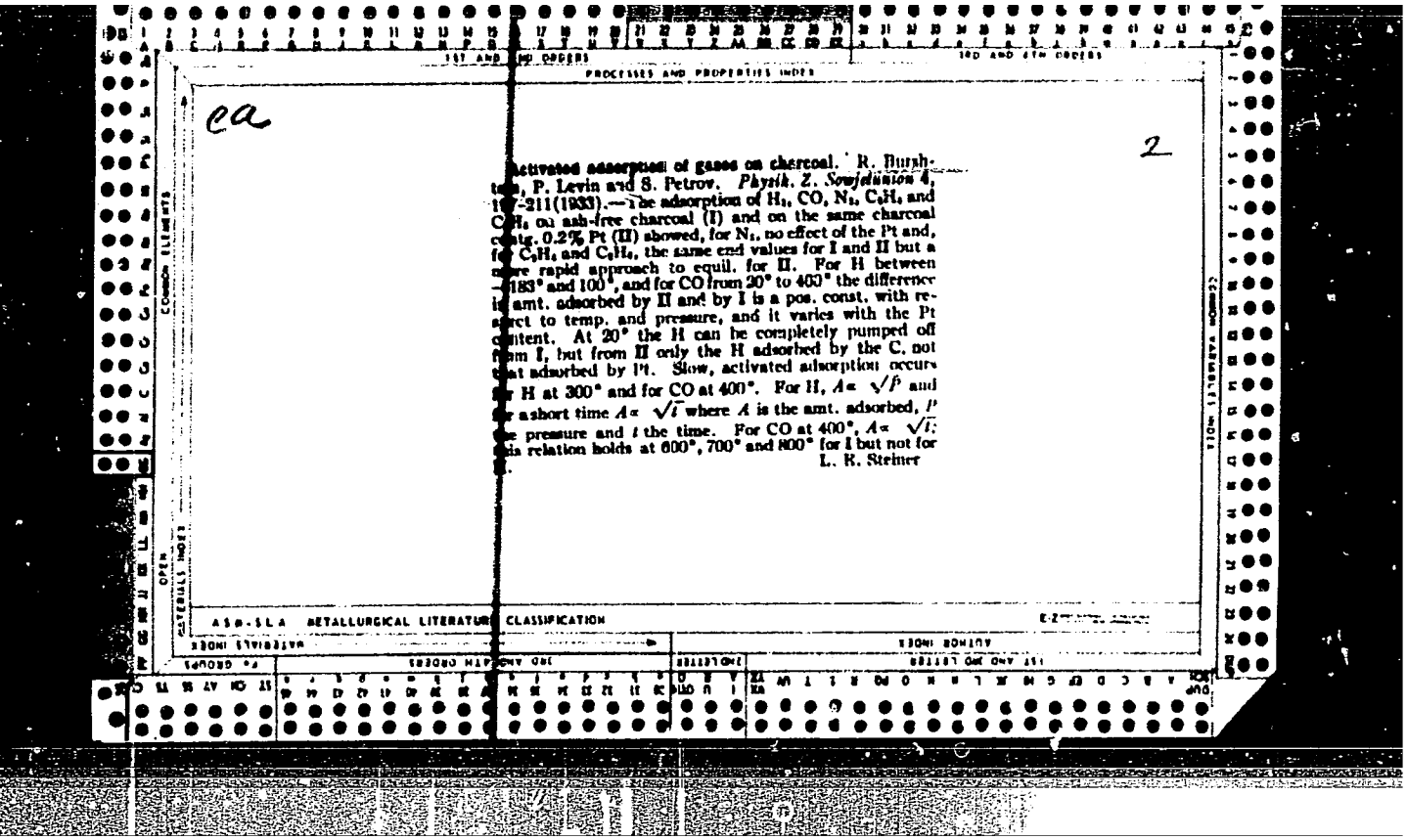
BURSTEIN, P.

Adsorption of hydrogen on platinized charcoal. P. Burstein and A. Frumkin. *J. Phys. Chem.* (U. S. S. R.) 3, 100-7(1932).—The rate as well as the amt of adsorption of H is increased many fold as the temp. is raised from 25° to 300°, the greatest increase coming above 200°.
P. H. Rathmann

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION



The para-ortho conversion of hydrogen. R. Kh. Burshtein. Uspekhi Khim. 2, 001-0(1933). A review.
P. H. Rathmann



ca

2

Activated adsorption of gases on charcoal. R. Burshtein, P. Levin and S. Petrov. *Physik. Z. Sowjetunion* 4, 197-211(1933).—The adsorption of H_2, CO, N_2, C_2H_4 and C_2H_2 on ash-free charcoal (I) and on the same charcoal contg. 0.2% Pt (II) showed, for N_2, no effect of the Pt and, for C_2H_4 and C_2H_2, the same end values for I and II but a more rapid approach to equil. for II. For H between −183° and 100°, and for CO from 20° to 400° the difference in amt. adsorbed by II and by I is a pos. const. with respect to temp. and pressure, and it varies with the Pt content. At 20° the H can be completely pumped off from I, but from II only the H adsorbed by the C, not that adsorbed by Pt. Slow, activated adsorption occurs for H at 300° and for CO at 400°. For H, $A \propto \sqrt{p}$ and for a short time $A \propto \sqrt{t}$ where A is the amt. adsorbed, p the pressure and t the time. For CO at 400°, $A \propto \sqrt{t}$; this relation holds at 600°, 700° and 800° for I but not for II.

L. R. Steiner

PROCESSES AND PROPERTIES INDEX

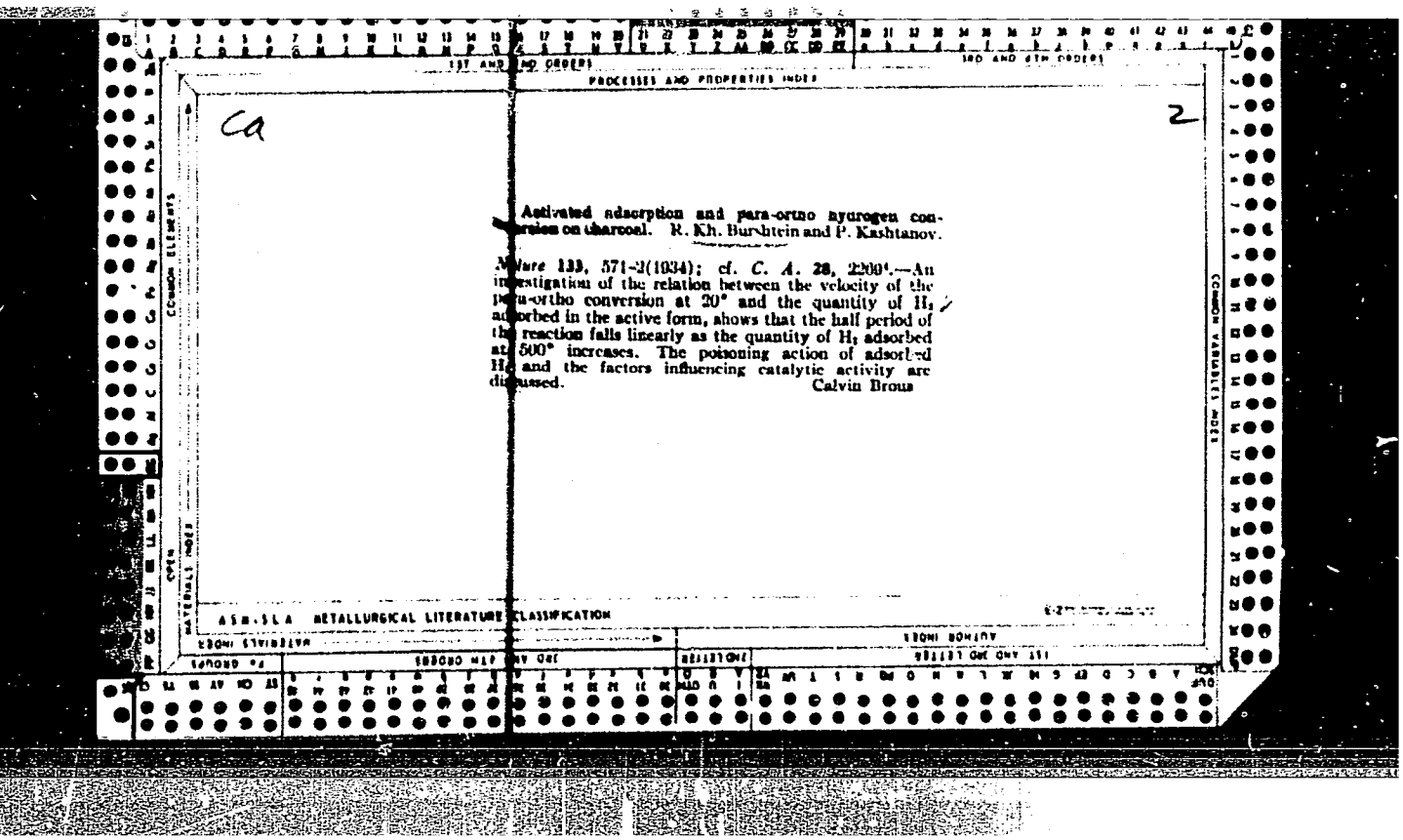
BC

A-1

Activated adsorption of hydrogen on charcoal and the influence on the catalytic activity of charcoal. R. Burstein and P. Kashtanov (Acta Physicochim. U.R.S.S., 1934, 1, 465—472).—The rate of ortho-para-H_2 conversion on charcoal "poisoned" by activated adsorption of H at temp. of 300°, 500°, and 700° is considerably decreased. The conversion at high temp. does not take place through an intermediate stage of activated adsorption, and the above-mentioned decrease in the rate is not due to a change in the van der Waals adsorption. The H atoms formed in the activated adsorption process are so tightly bound by the charcoal surface that they do not hydrogenate adsorbed C_2H_4.

O. J. W.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



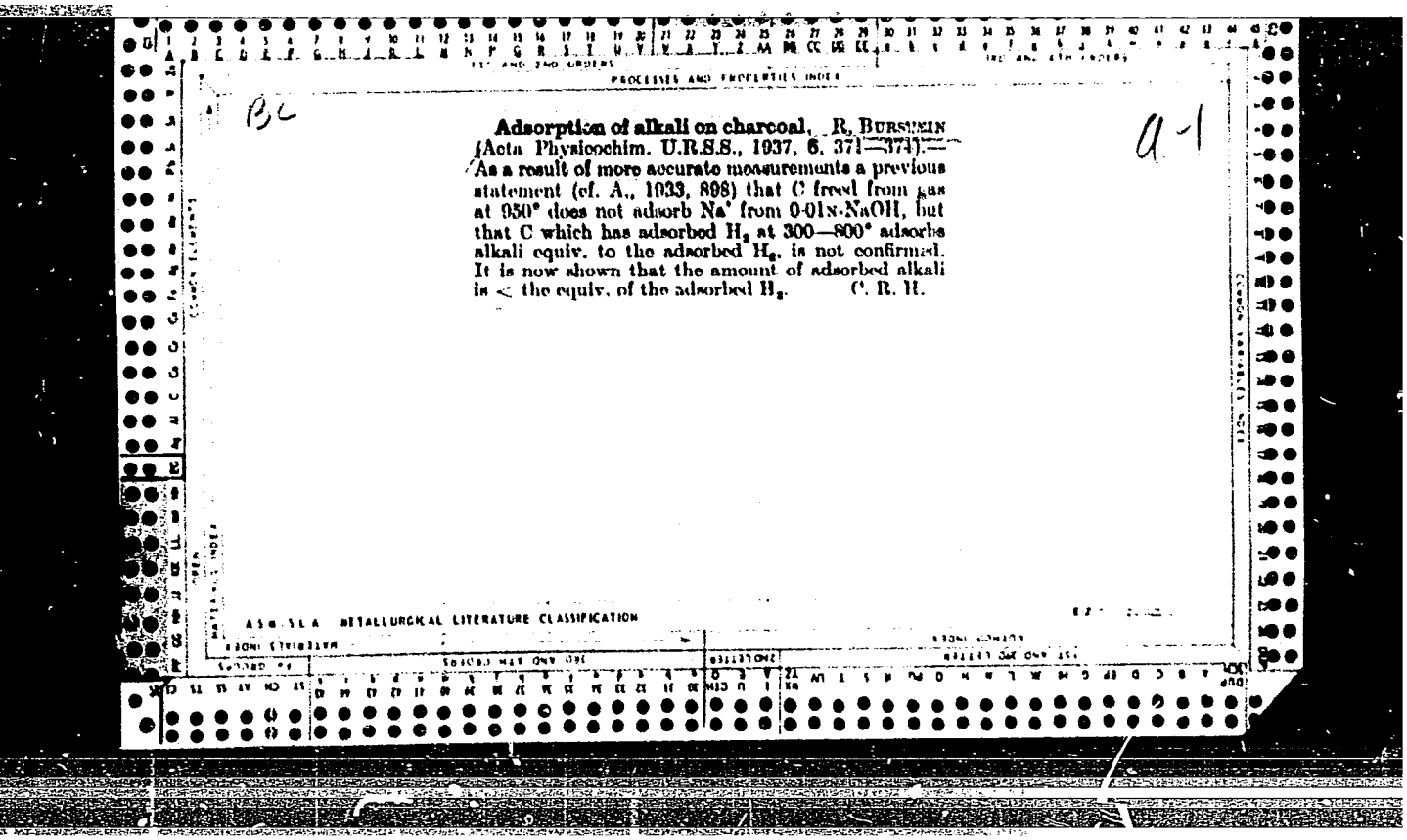
Ca

2

Activated adsorption and para-ortho hydrogen conversion on charcoal. R. Kh. Burshtein and P. Kashtanov.

Nature **133**, 571-2(1934); cf. *C. A.* **28**, 2209⁴.—An investigation of the relation between the velocity of the para-ortho conversion at 20° and the quantity of H_2 adsorbed in the active form, shows that the half period of the reaction falls linearly as the quantity of H_2 adsorbed at 500° increases. The poisoning action of adsorbed H_2 and the factors influencing catalytic activity are discussed.

Calvin Brous

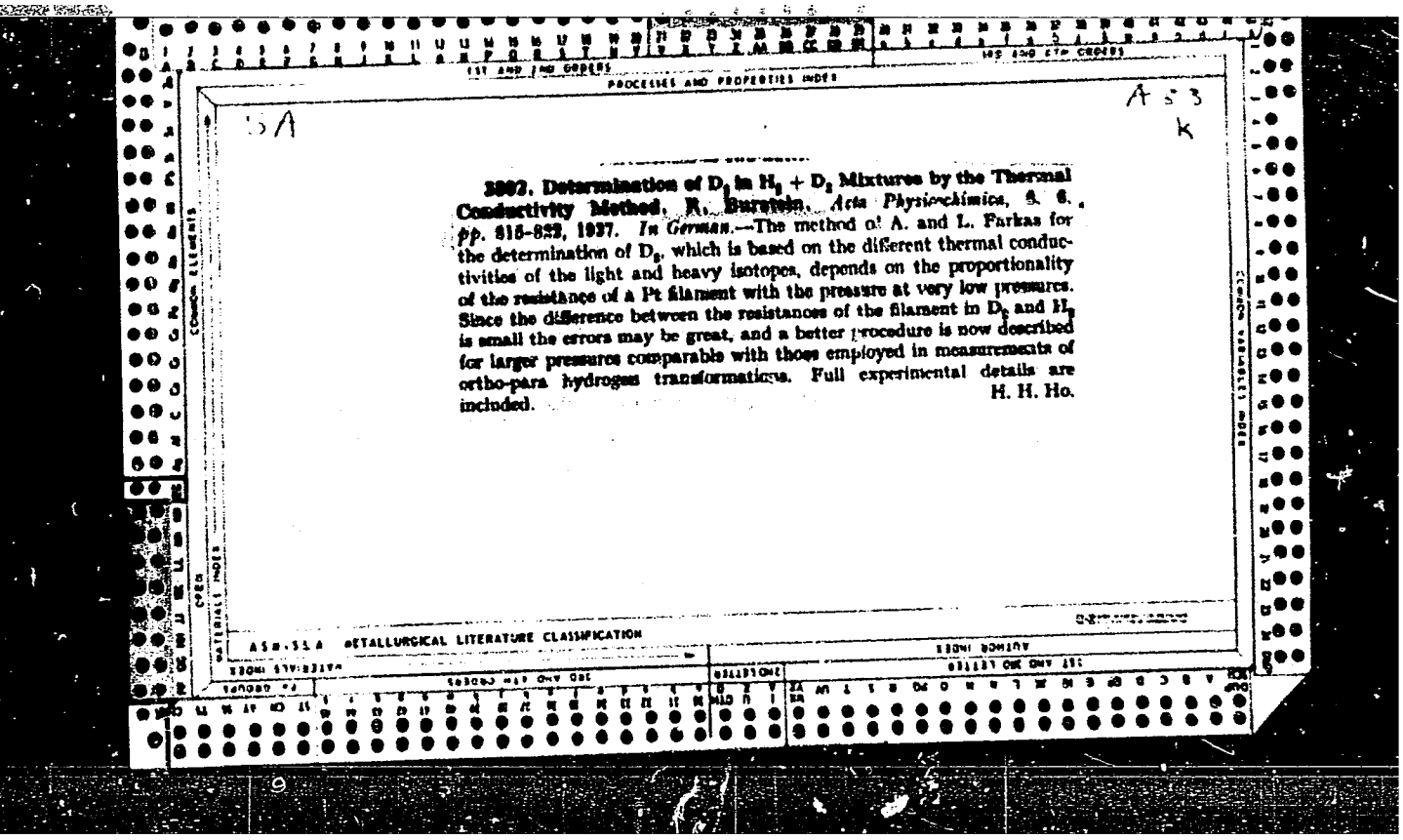


BC

A-1

Adsorption of alkali on charcoal. R. BURSTEIN (Acta Physicochim. U.R.S.S., 1937, 6, 371—374).—As a result of more accurate measurements a previous statement (cf. A., 1933, 898) that C freed from gas at 950° does not adsorb $Na^{\cdot}$ from 0·01N-NaOH, but that C which has adsorbed H_2 at 300—800° adsorbs alkali equiv. to the adsorbed H_2, is not confirmed. It is now shown that the amount of adsorbed alkali is < the equiv. of the adsorbed H_2. C. R. H.

A 5 6 1 A METALLURGICAL LITERATURE CLASSIFICATION



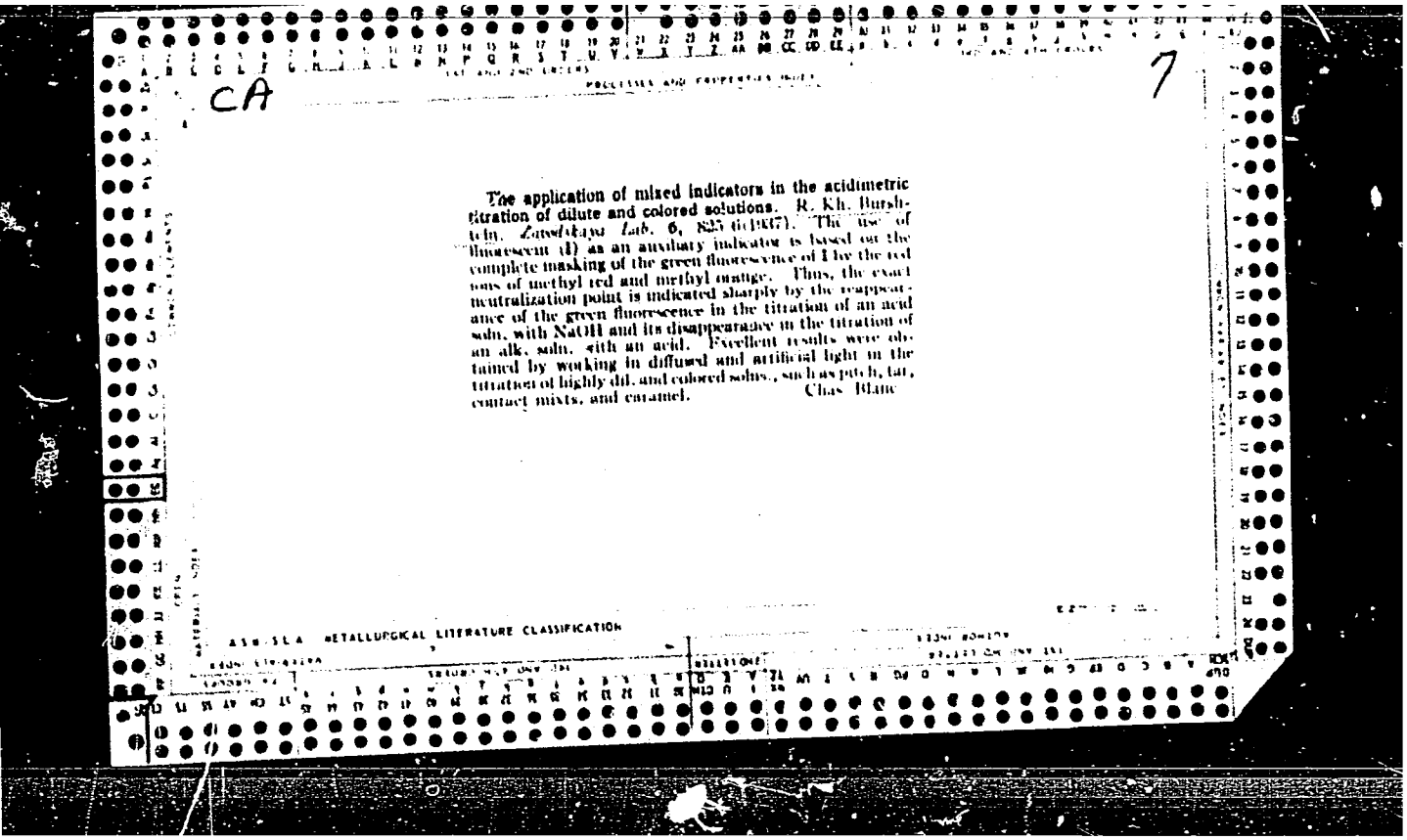
PROCESSES AND PROPERTIES INDEX

5A

A53
k

3902. Determination of D_2 in $H_2 + D_2$ Mixtures by the Thermal Conductivity Method. R. Durstein. *Acta Physicochimica*, 9, 6., pp. 815–822, 1937. *In German.*—The method of A. and L. Farkas for the determination of D_2, which is based on the different thermal conductivities of the light and heavy isotopes, depends on the proportionality of the resistance of a Pt filament with the pressure at very low pressures. Since the difference between the resistances of the filament in D_2 and H_2 is small the errors may be great, and a better procedure is now described for larger pressures comparable with those employed in measurements of ortho-para hydrogen transformations. Full experimental details are included. H. H. Ho.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

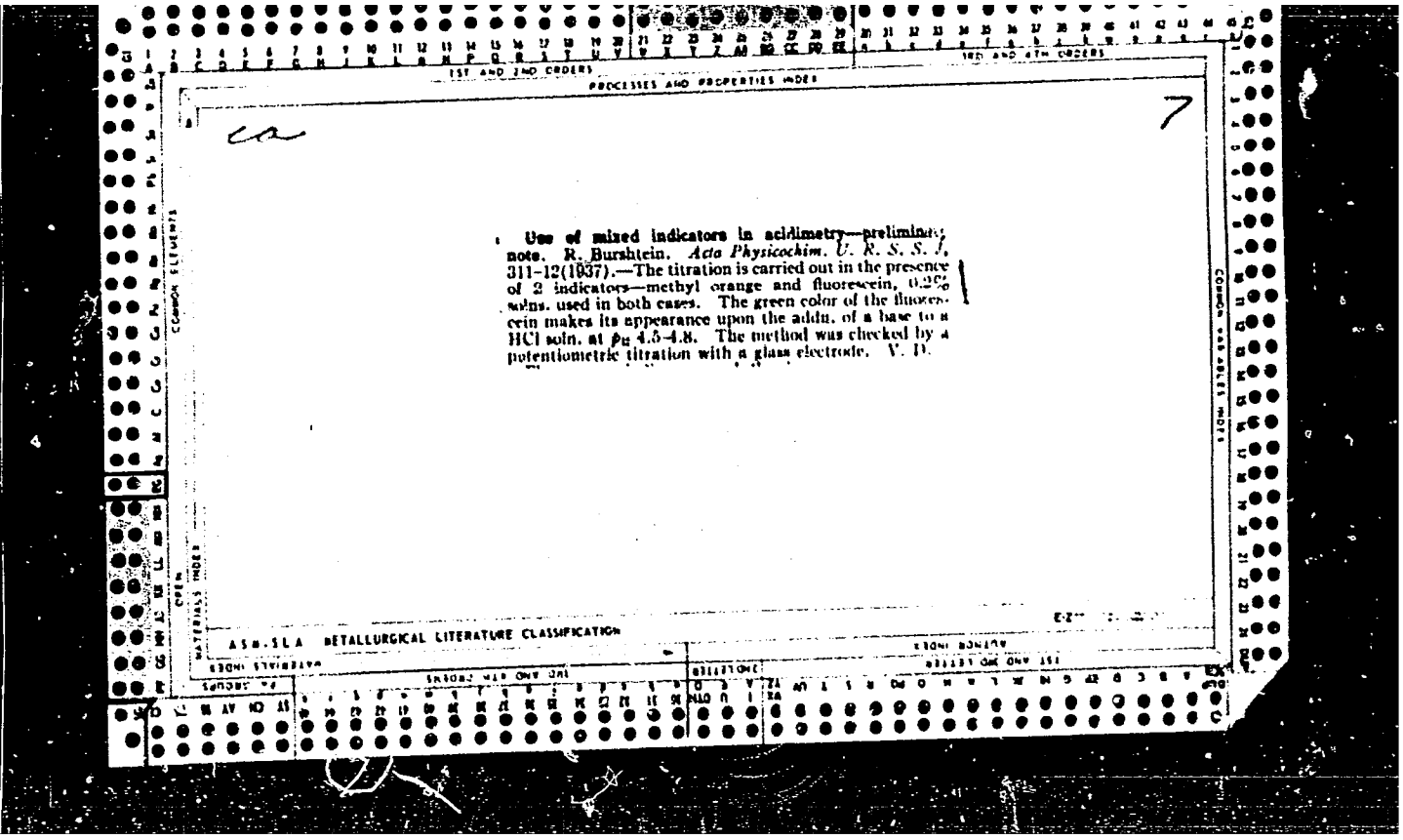


CA

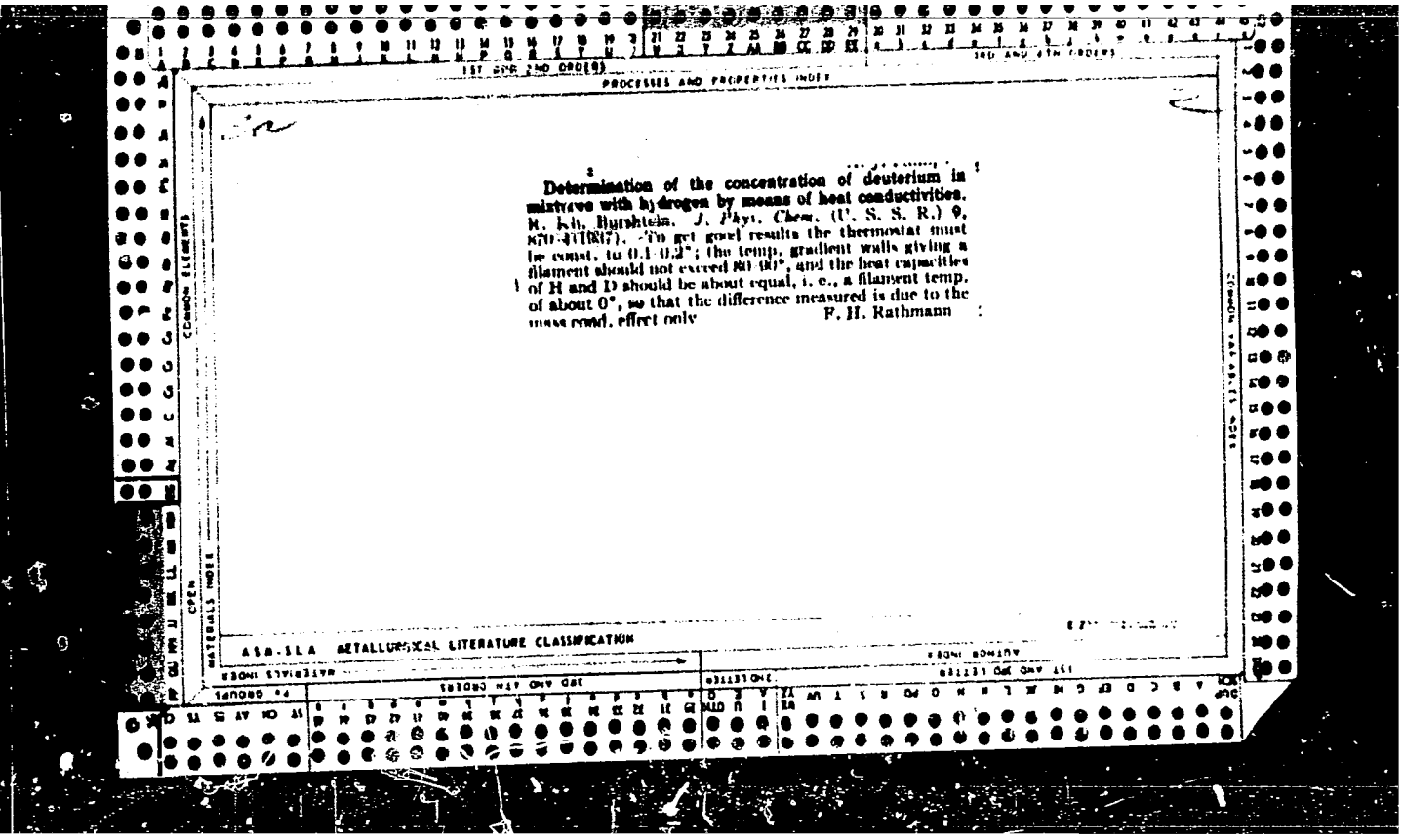
7

The application of mixed indicators in the acidimetric titration of dilute and colored solutions. R. Kh. Burshtein. *Zavodskaya Lab.* 6, 825 (1937). The use of fluorescein (I) as an auxiliary indicator is based on the complete masking of the green fluorescence of I by the red ions of methyl red and methyl orange. Thus, the exact neutralization point is indicated sharply by the reappearance of the green fluorescence in the titration of an acid soln. with NaOH and its disappearance in the titration of an alk. soln. with an acid. Excellent results were obtained by working in diffused and artificial light in the titration of highly dil. and colored solns., such as pitch, tar, contact mixts. and caramel. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



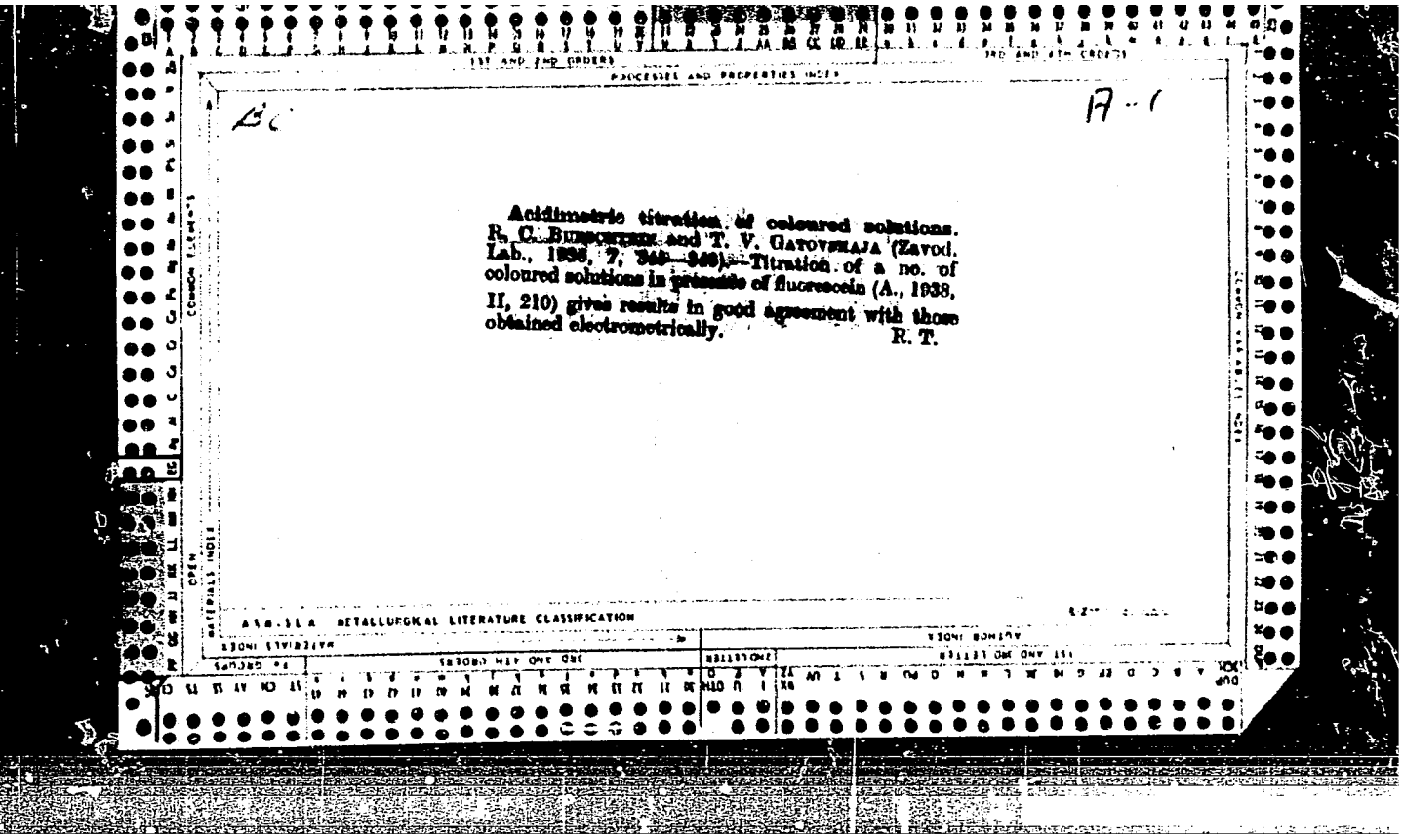
Use of mixed indicators in acidimetry—preliminary note. R. Burshtein. *Acta Physicochim. U. R. S. S.*, 7, 311–12(1937).—The titration is carried out in the presence of 2 indicators—methyl orange and fluorescein, 0.2% solns. used in both cases. The green color of the fluorescein makes its appearance upon the addn. of a base to a HCl soln. at p_H 4.5–4.8. The method was checked by a potentiometric titration with a glass electrode. V. D.



PROCESSES AND PROPERTIES INDEX

Determination of the concentration of deuterium in mixtures with hydrogen by means of heat conductivities. B. L. Burshtein. *J. Phys. Chem.* (U. S. S. R.) 9, 870-4(1937). To get good results the thermostat must be const. to 0.1-0.2°; the temp. gradient walls giving a filament should not exceed 80-90°, and the heat capacities of H and D should be about equal, i. e., a filament temp. of about 0°, so that the difference measured is due to the mass coud. effect only. F. H. Rathmann

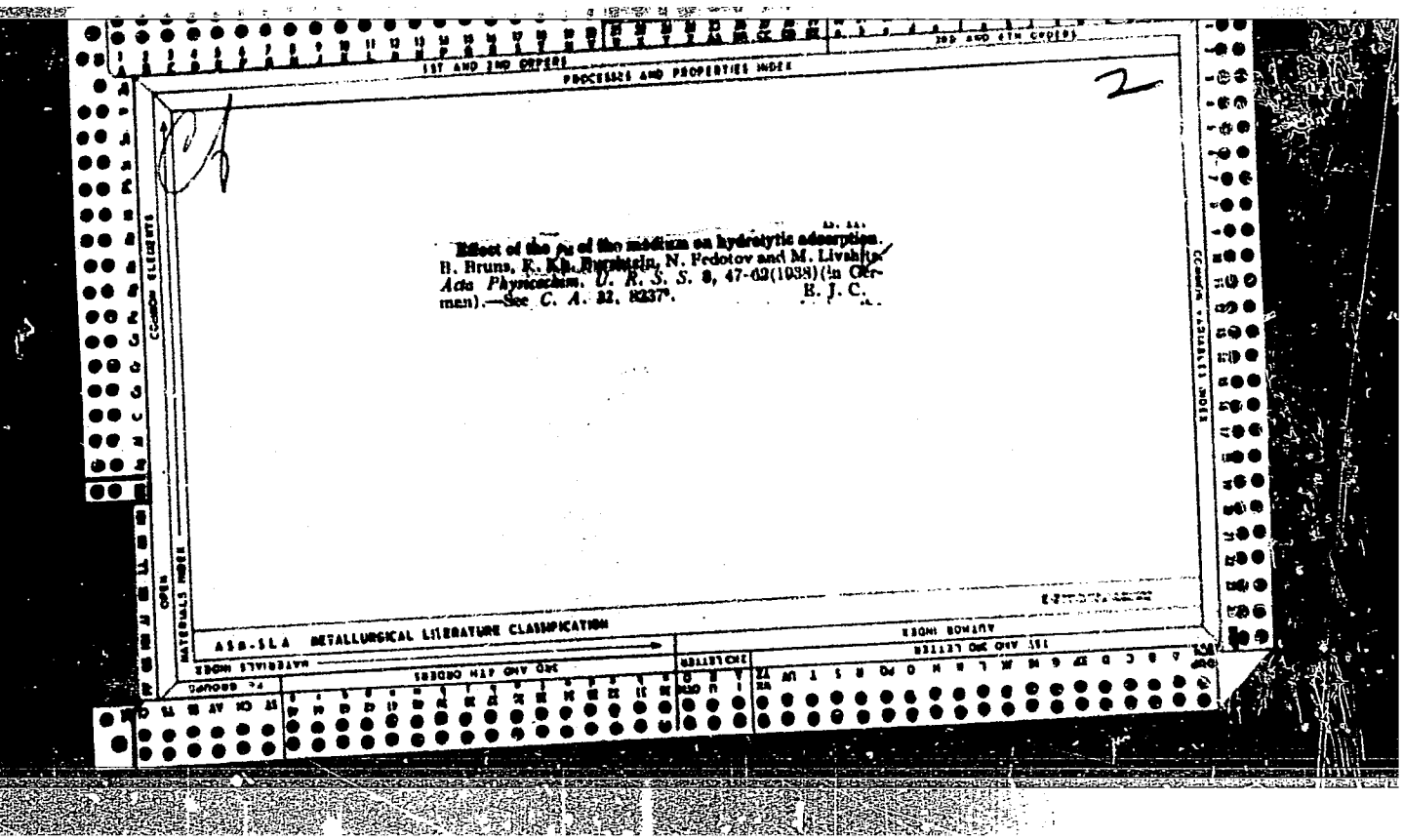
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



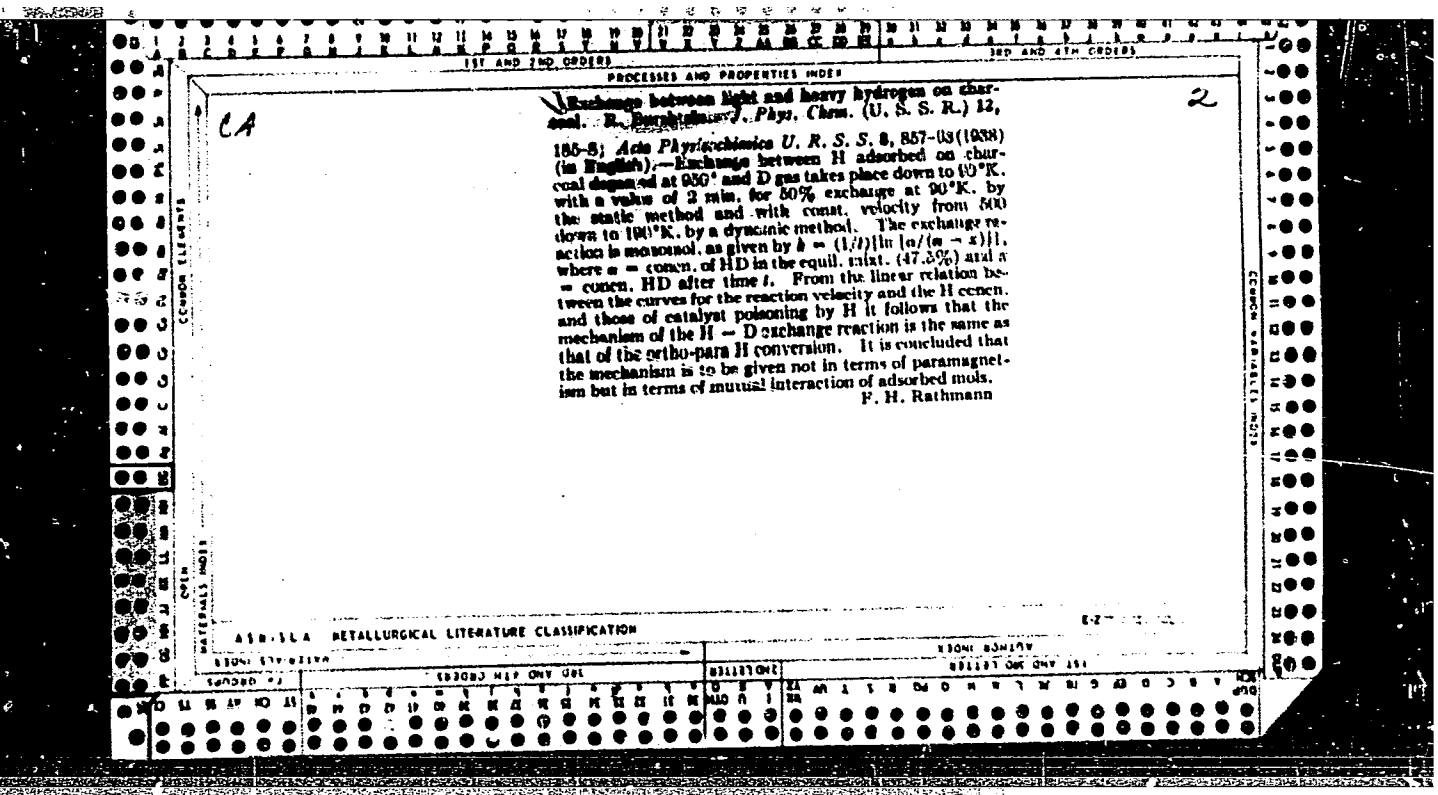
B-c

A-1

Acidimetric titration of coloured solutions. R. C. BURGOYNE and T. V. GATOVSKAJA (Zavod. Lab., 1938, 7, 368—369).—Titration of a no. of coloured solutions in presence of fluorescein (A., 1938, II, 210) gives results in good agreement with those obtained electrometrically. R. T.



Effect of the p_H of the medium on hydrolytic adsorption.
B. Bruns, F. Kh. Burshtein, N. Fedotov and M. Livshits. *Acta Physicochim. U. R. S. S.* 8, 47-62(1938)(In German).—See *C. A.* 32, 8237⁹. B. J. C.



1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

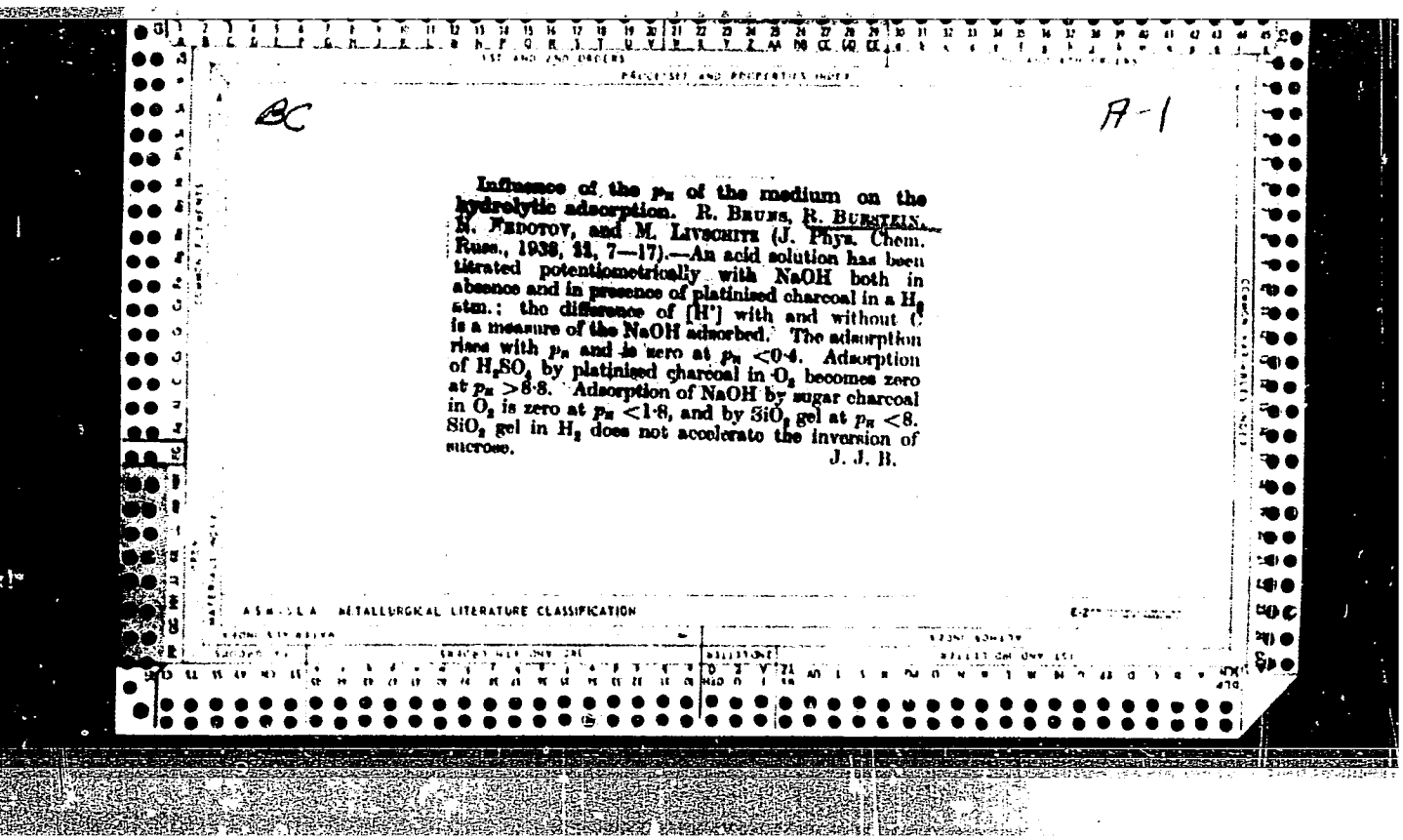
CA

2

Exchange between light and heavy hydrogen on charcoal. B. Dorfman. *J. Phys. Chem.* (U. S. S. R.) 12, 185–8; *Acta Physicochimica U. R. S. S.* 8, 857–68 (1938) (in English).—Exchange between H adsorbed on charcoal degassed at 950° and D gas takes place down to 90°K. with a value of 2 min. for 50% exchange at 90°K. by the static method and with const. velocity from 500 down to 190°K. by a dynamic method. The exchange reaction is monomol. as given by $k = (1/t)[\ln |a/(a - x)|]$, where a = concn. of HD in the equil. mixt. (47.5%) and x = concn. HD after time t. From the linear relation between the curves for the reaction velocity and the H concn. and those of catalyst poisoning by H it follows that the mechanism of the H – D exchange reaction is the same as that of the ortho-para H conversion. It is concluded that the mechanism is to be given not in terms of paramagnetism but in terms of mutual interaction of adsorbed mols.

F. H. Rathmann

A 38-1 LA METALLURGICAL LITERATURE CLASSIFICATION



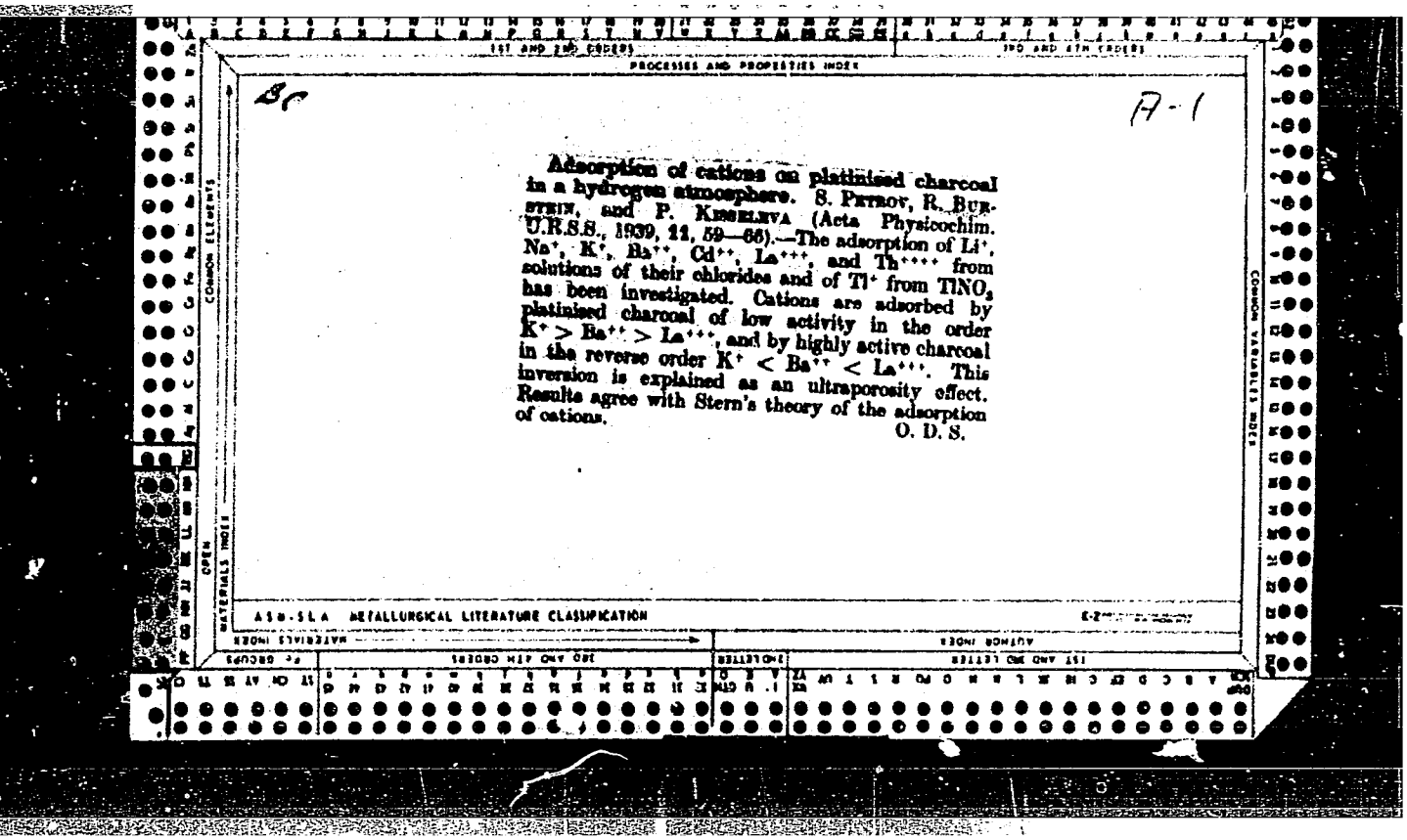
BC

A-1

Influence of the p_H of the medium on the hydrolytic adsorption. R. BRUNS, R. BURSTEIN, N. FEDOTOV, and M. LIVSCHITZ (J. Phys. Chem. Russ., 1938, 11, 7—17).—An acid solution has been titrated potentiometrically with NaOH both in absence and in presence of platinised charcoal in a H_2 atm.; the difference of [H'] with and without C is a measure of the NaOH adsorbed. The adsorption rises with p_H and is zero at p_H <0·4. Adsorption of H_2SO_4 by platinised charcoal in O_2 becomes zero at p_H >6·8. Adsorption of NaOH by sugar charcoal in O_2 is zero at p_H <1·8, and by $3iO_2$ gel at p_H <8. SiO_2 gel in H_2 does not accelerate the inversion of sucrose.

J. J. B.

A S M - I S A METALLURGICAL LITERATURE CLASSIFICATION

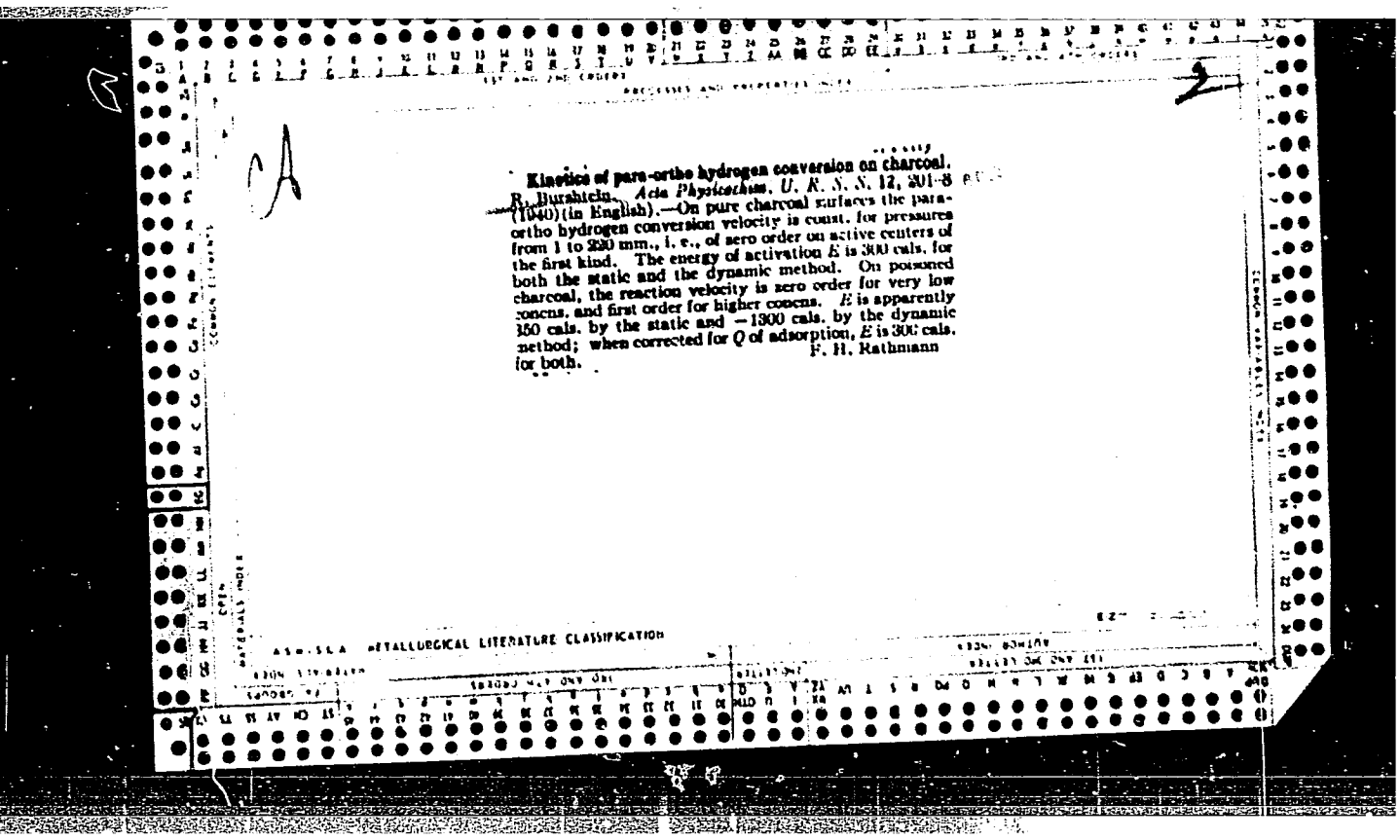


8C

A-1

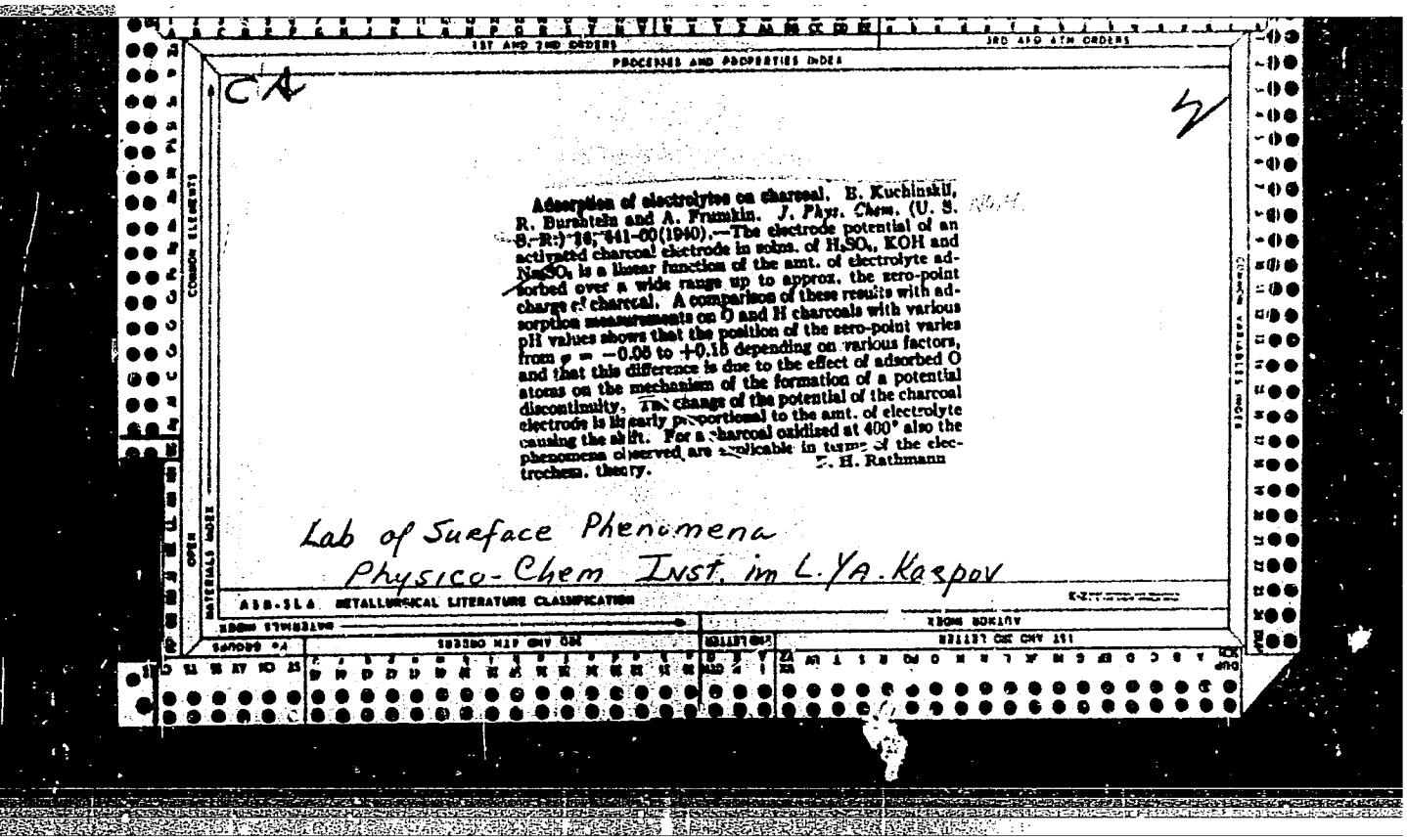
Adsorption of cations on platinised charcoal in a hydrogen atmosphere. S. Pappov, R. Burstein, and P. Kreshkova (Acta Physicochim. U.R.S.S., 1939, 11, 59—66).—The adsorption of Li^+, Na^+, K^+, Ba^{++}, Cd^{++}, La^{+++}, and Th^{++++} from solutions of their chlorides and of Tl^+ from $TlNO_3$ has been investigated. Cations are adsorbed by platinised charcoal of low activity in the order $K^+ > Ba^{++} > La^{+++}$, and by highly active charcoal in the reverse order $K^+ < Ba^{++} < La^{+++}$. This inversion is explained as an ultraporosity effect. Results agree with Stern's theory of the adsorption of cations.

O. D. S.



Kinetics of para-ortho hydrogen conversion on charcoal. R. Burshtein. *Acta Physicochim. U. R. S. S.* 12, 301–8 (1940) (in English).—On pure charcoal surfaces the para-ortho hydrogen conversion velocity is const. for pressures from 1 to 250 mm., i. e., of zero order on active centers of the first kind. The energy of activation E is 300 cals. for both the static and the dynamic method. On poisoned charcoal, the reaction velocity is zero order for very low concns. and first order for higher concns. E is apparently 150 cals. by the static and −1300 cals. by the dynamic method; when corrected for Q of adsorption, E is 300 cals. for both.

F. H. Rathmann

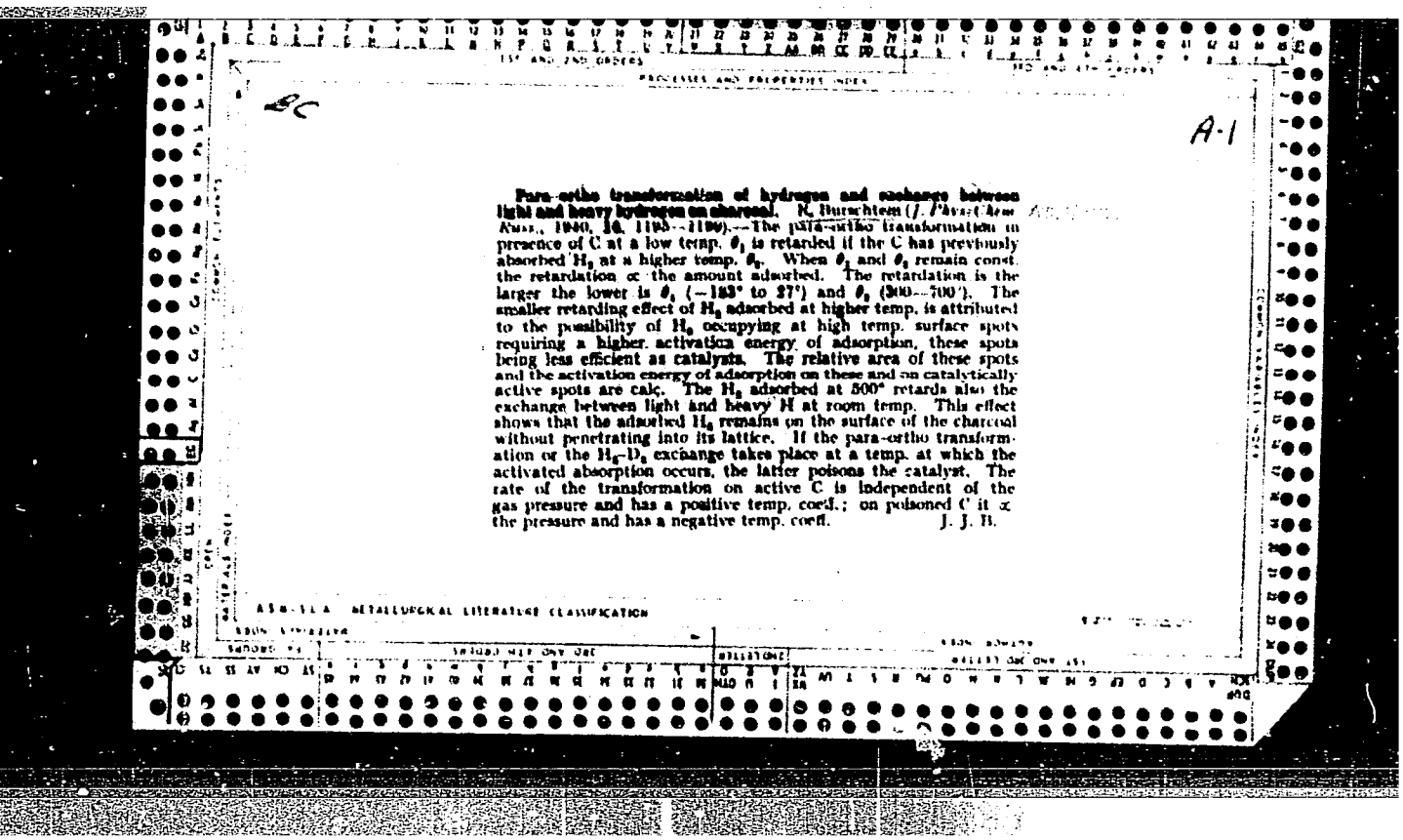


PROCESSES AND PROPERTIES INDEX

CA

Adsorption of electrolytes on charcoal. B. Kuchinskii, R. Burshtein and A. Frumkin. *J. Phys. Chem.* (U. S. S. R.) 16, 641-60(1940).—The electrode potential of an activated charcoal electrode in solns. of H_2SO_4, KOH and Na_2SO_4 is a linear function of the amt. of electrolyte adsorbed over a wide range up to approx. the zero-point charge of charcoal. A comparison of these results with adsorption measurements on O and H charcoals with various pH values shows that the position of the zero-point varies from $p_H = -0.05$ to $+0.15$ depending on various factors, and that this difference is due to the effect of adsorbed O atoms on the mechanism of the formation of a potential discontinuity. The change of the potential of the charcoal electrode is linearly proportional to the amt. of electrolyte causing the shift. For a charcoal oxidised at 400° also the phenomena observed are applicable in terms of the electrochem. theory. F. H. Rathmann

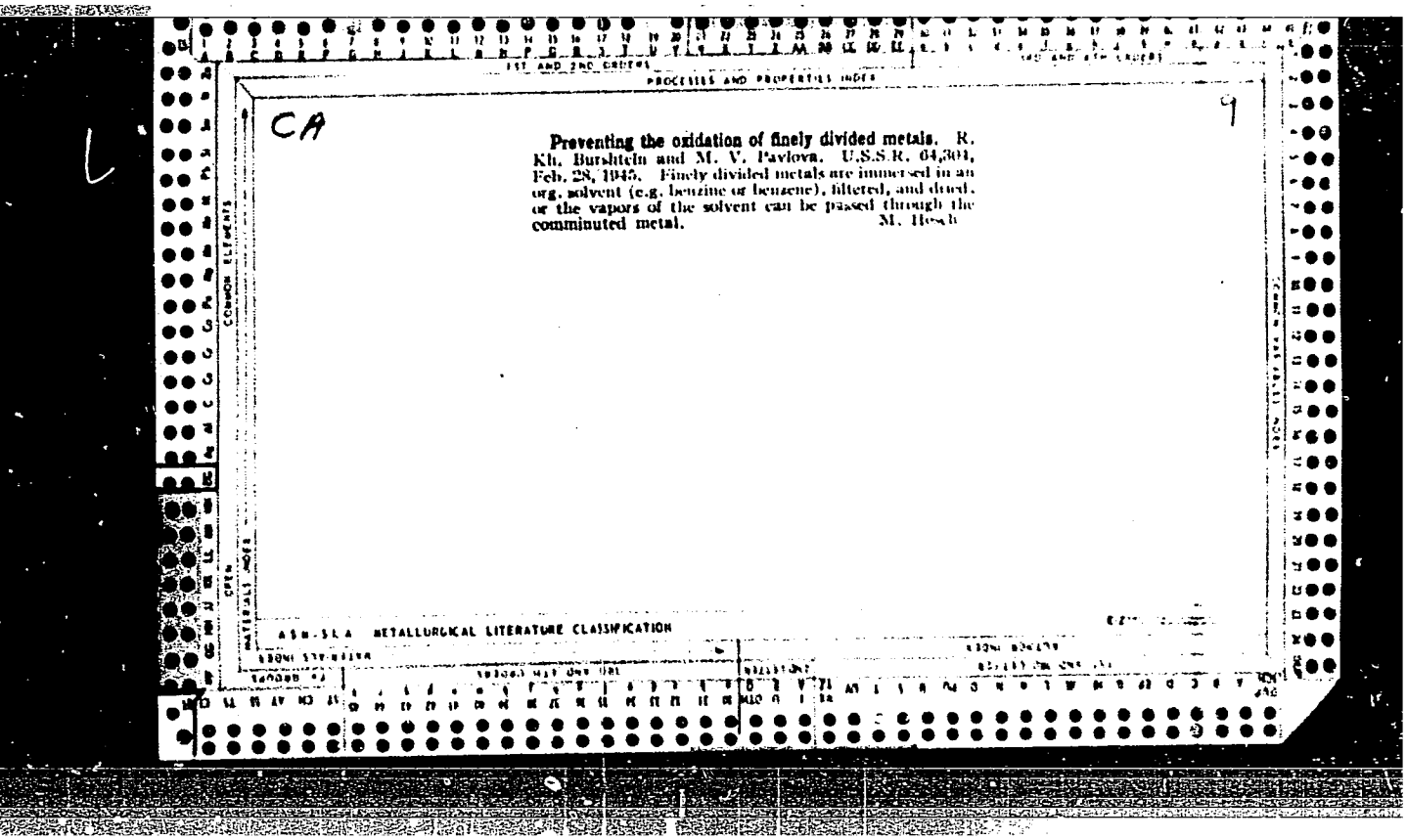
Lab of Sueface Phenomena
Physico-Chem Inst. im L.YA. Karpov



Para-ortho transformation of hydrogen and exchange between light and heavy hydrogen on charcoal. K. Burschkeen (*J. Amer. Chem. Assn.*, 1940, **10**, 1193–1199).—The para-ortho transformation in presence of C at a low temp. θ_1 is retarded if the C has previously absorbed H_2 at a higher temp. θ_2. When θ_2 and θ_3 remain const. the retardation $\propto$ the amount adsorbed. The retardation is the larger the lower is θ_1 (−183° to 27°) and θ_2 (300–700°). The smaller retarding effect of H_2 adsorbed at higher temp. is attributed to the possibility of H_2 occupying at high temp. surface spots requiring a higher activation energy of adsorption, these spots being less efficient as catalysts. The relative area of these spots and the activation energy of adsorption on these and on catalytically active spots are calc. The H_2 adsorbed at 500° retards also the exchange between light and heavy H at room temp. This effect shows that the adsorbed H_2 remains on the surface of the charcoal without penetrating into its lattice. If the para-ortho transformation or the H_2–D_2 exchange takes place at a temp. at which the activated absorption occurs, the latter poisons the catalyst. The rate of the transformation on active C is independent of the gas pressure and has a positive temp. coeff.; on poisoned C it $\propto$ the pressure and has a negative temp. coeff. J. J. B.

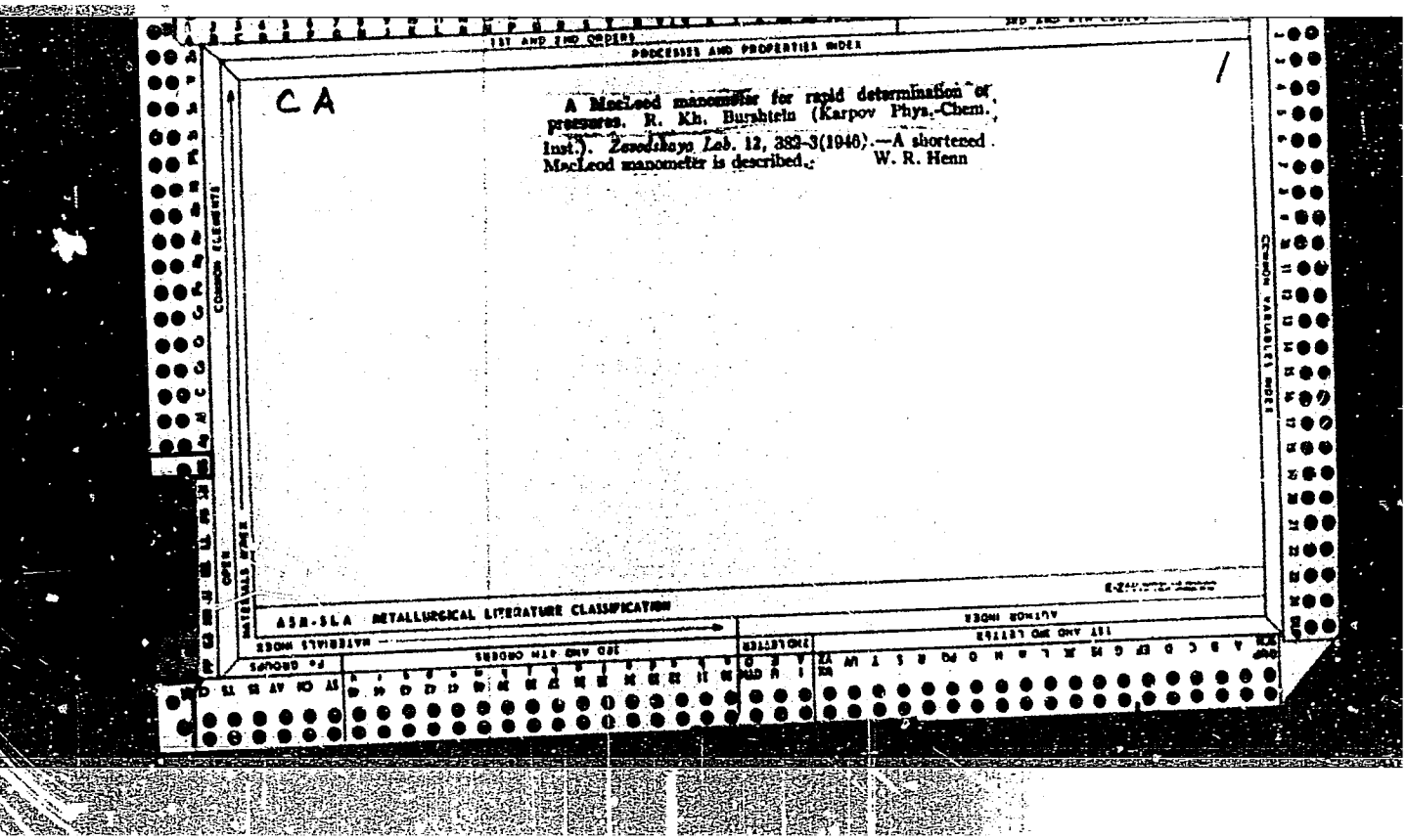
Hydrogen peroxide formation on the adsorption of acids by activated charcoal. R. Burschtein and A. Frumkin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 327—329).—10 c.c. of aq. H_2SO_4 were added to 0·5 g. of charcoal, and O_2 was passed through the mixture. After filtration through a glass filter the adsorbed anion was determined by titration with standard alkali and H_2O_2 by $KMnO_4$. As $[H_2SO_4]$ is increased the yield of H_2O_2 rises. H_2O_2 is, however, formed only when gaseous O_2 is present; in the cathodic reduction of O_2 with C electrodes the rate of formation of H_2O_2 depends on the c.d.

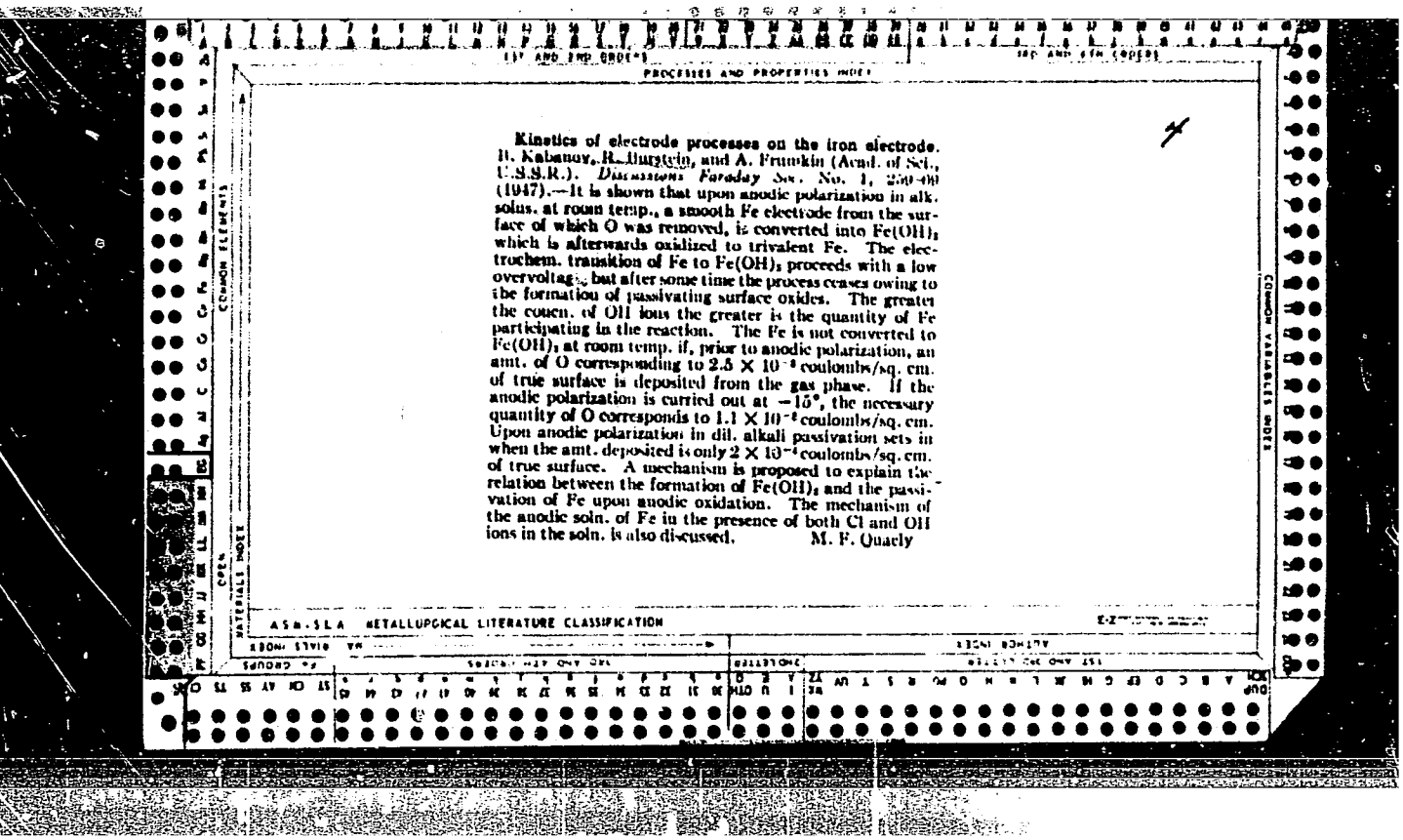
W. R. A.



CA

Preventing the oxidation of finely divided metals. R. Kh. Burshtein and M. V. Pavlova. U.S.S.R. 64,301, Feb. 28, 1945. Finely divided metals are immersed in an org. solvent (e.g. benzine or benzene), filtered, and dried, or the vapors of the solvent can be passed through the comminuted metal. M. Hosch





PROCESSES AND PROPERTIES INDEX

Kinetics of electrode processes on the iron electrode. B. Kabanov, R. Burstein, and A. Frumkin (Acad. of Sci., U.S.S.R.). *Discussions Faraday Soc.* No. 1, 259-69 (1947).—It is shown that upon anodic polarization in alk. solns. at room temp., a smooth Fe electrode from the surface of which O was removed, is converted into $Fe(OH)_2$ which is afterwards oxidized to trivalent Fe. The electrochem. transition of Fe to $Fe(OH)_2$ proceeds with a low overvoltage, but after some time the process ceases owing to the formation of passivating surface oxides. The greater the concn. of OH ions the greater is the quantity of Fe participating in the reaction. The Fe is not converted to $Fe(OH)_2$ at room temp. if, prior to anodic polarization, an amt. of O corresponding to 2.5×10^{-6} coulombs/sq. cm. of true surface is deposited from the gas phase. If the anodic polarization is carried out at −15°, the necessary quantity of O corresponds to 1.1×10^{-6} coulombs/sq. cm. Upon anodic polarization in dil. alkali passivation sets in when the amt. deposited is only 2×10^{-4} coulombs/sq. cm. of true surface. A mechanism is proposed to explain the relation between the formation of $Fe(OH)_2$ and the passivation of Fe upon anodic oxidation. The mechanism of the anodic soln. of Fe in the presence of both Cl and OH ions in the soln. is also discussed. M. F. Quaely

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

BURSHTEYN, R. ~~Kh.~~ Kh.

PA 8/49T6

USSR/Chemistry - Iron, Oxygen Adsorption on Jul 48
Chemistry - Iron, Potential

"Effect of Oxygen Adsorbed in Iron on the Contact Potential Difference," R. Kh. Burshteyn, M. D. Surova, 3 3/4 pp

"Dok Ak Nauk SSSR" Vol LXI, No 1

Report of experiments. Apparatus used was diode with tungsten cathode and iron anode. By taking volt-ampere characteristic with pure iron and with iron on surface of which a known quantity of oxygen had been absorbed, was possible to determine contact potential difference by differences between curves. Investigations continue. Submitted 20 Apr 1948.

[redacted]

8/49T6

BURSHTEYN, R. KH.

USSR/Chemistry - Laboratory Equipment Aug 50

"Movable Thermocouple for a Close Space," R. Kh. Burshteyn, Inst of Phys Chem, Acad Sci USSR

"Zavod Lab" Vol XVI, No 8, p 1021

Device permits measurements of temperature in various parts of reaction space using single movable thermocouple. Shifting of themocouple is 25 cm but may be changed. Device was used for 2 years for measuring temperature at various points in high vacuum and in cases when shifting of apparatus parts was required in the vacuum, but also may be used under atmospheric pressure.

169T17

BURSHTEIN, R. Kh.

Y

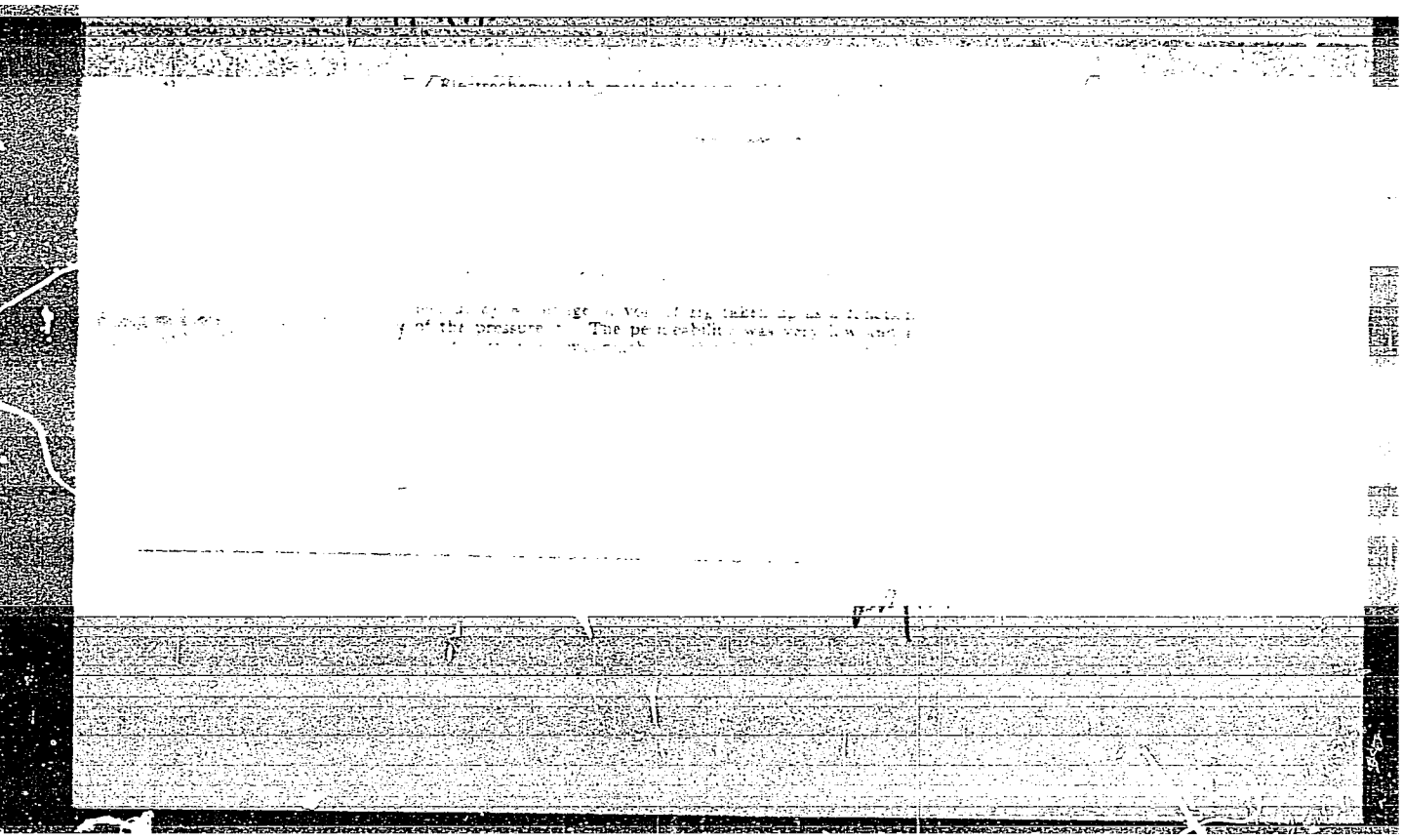
Y

Effect of oxygen adsorbed on iron upon the contact potential difference. R. Kh. Burshtein, M. D. Surova, and L. A. Zaldumaev (Acad. Sci., U.S.S.R., Moscow). *Zhur. Fiz. Khim.* **24**, 214-23(1950).—The p.d. V between a W cathode and an Fe anode was detd. in an *app.* making it possible to keep W in a vacuum while Fe was adsorbing O_2. After a definite amt. a of O_2 (detd. from vol. reduction) had been adsorbed at temp. T, Fe was cooled to room temp., the vessel was evacuated, W introduced into it, and V measured. The temp. of Fe rose to 95° during this measurement. The true surface S of Fe (wire coil) was detd. from the adsorption of O_2 (cf. *C.A.* **41**, 6454b). At T = 100°, 150°, and 270° V increased with a/S to a max. at 0.63 v. and 22 × 10^{14} mol./sq. cm., 0.49 v. and 35 × 10^{14}, and 0.19 v. and 72 × 10^{14}, resp., and then decreased; the original V was reached at about 6 × 10^{14}, 8 × 10^{14}, and 10 × 10^{14} mol./sq. cm., resp., and neg. values of V were observed at higher T (up to 410°) and great a/S. Increase in V means decrease in the work function; this decrease is unexpected and presumably shows that O is adsorbed under the top layer of Fe. The value of a/S corresponding to the max. change in V is nearly equal to the limit of the rapid stage of adsorption of O_2 by freshly reduced Fe (the Fe anode was heated in H at 600° before the O_2 adsorption). If an Fe anode after adsorbing a/S of O at 100° (or 150°) was heated to 150° (or cooled to 100°) and its V detd. at room temp., this corresponded to T of 150° (or 100°). V detd. at −120° (when the anode was cooled with liquid air; app. described) was [illegible] v. greater than without cooling, and adsorption of 10^{14} mol./sq.cm. of O_2 lowered V by 0.18 v. At −120°, O is adsorbed on the surface of Fe and forms an elec. double layer whose neg. side is in contact with air.

J. J. Bikerman

Effect of oxygen adsorbed on platinum on the contact potential difference. T. V. Kalish and R. Kh. Burshtein. *Doklady Akad. Nauk S.S.S.R.* 81, 1093-6(1951).—The contact potential difference is measured by the current-voltage curve of a diode in which Pt (foil of 10.6 sq. cm. or wire of 4.2 sq. cm. surface area) is anode, and W cathode. From measurements with the Pt reduced with H at 400°, then outgassed at 1100-200° and evacuated to 10^{-6} mm. Hg, and with Pt exposed to O, and then evacuated to remove unadsorbed gas, it follows that at room temp., under 0.1 mm. Hg of O, only a fraction of a monolayer is adsorbed. Both the rate of adsorption and the amt. adsorbed increase with the temp.; at 800°, the amt. of O taken up by the Pt corresponds to some 300 layers. The work function φ of Pt having adsorbed 17.5×10^{14} mols. O/sq. cm. at 200° is increased by about 0.2 v.; however, this increase of φ disappears after 11 hrs., and φ goes back to practically the original value for a pure Pt surface. Renewed adsorption of 41.2×10^{14} mols. O_2/sq. cm. again raises φ by 0.2 v., and this excess again vanishes after 12 hrs.; smaller amts. of O, 3×10^{14} to 20×10^{14} mols., fail to influence φ. However, with larger amts., $50 \times 10^{14} - 200 \times 10^{14}$ mols., one observes, first, a strong temporary increase of φ by up to 1.5 – 1.8 v., rapidly decreasing with time and attaining after 40-80 min. a value by 0.2-0.3 v. in excess of the normal φ; this excess vanishes slowly in a matter of 9-16 hrs. These effects are evidently due to a diffusion of O into the interior of the metal. Small amts. of O, as 17.1×10^{14} mol./sq. cm., which alter φ at 200°, have no effect at 400°; possibly, at 400°, the rate of diffusion into the interior is too fast for any increase of φ to be noticed. Desorption of O cannot account for these phenomena, first because it was not observed, and secondly, because it is highly improbable that O adsorbed at 200-400° should desorb at room temp. At 800°, under 0.1 mm. Hg of O, small amts. of O (8×10^{14} mols./sq. cm.) lower φ by about 0.1 v., but larger amts. increase φ, by up to 1.5 v. with 233×10^{14} mols. Adsorption of still larger amts. has no further effect on φ. With time (12-15 hrs.), the increment of φ goes back only insignificantly. Consequently, at 800°, the very nature of the bond between O and Pt is changed. There does remain, on the Pt surface, adsorbed O which changes φ permanently. On the assumption that the const. φ corresponds to a monolayer, it follows that by far the major part of the O goes into the interior, leaving at the surface only about 1.3×10^{14} mols. O/sq. cm. Below the limiting const. φ, the increase of $\Delta\varphi$ with the amt. of O adsorbed is nearly linear.

N. Thon

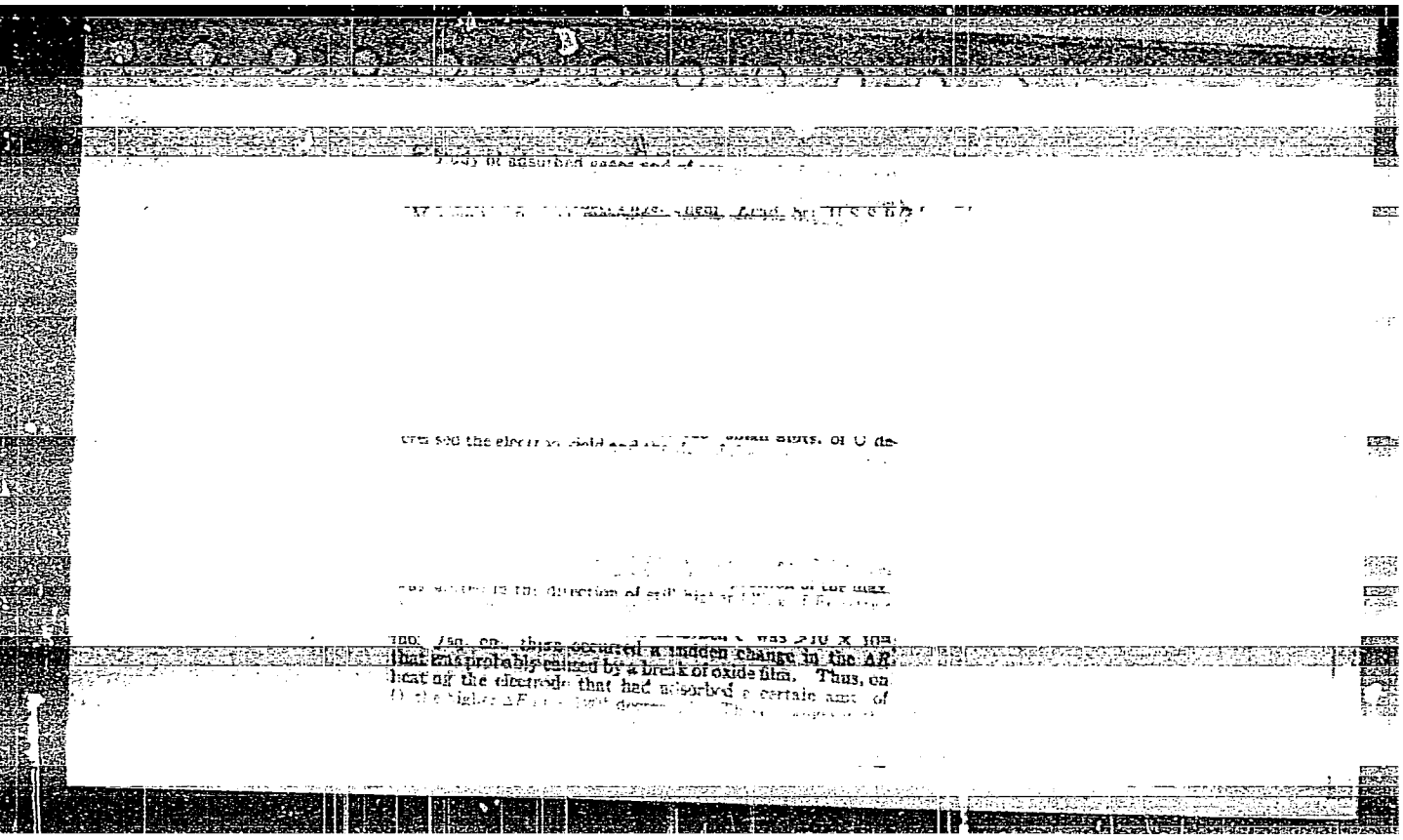


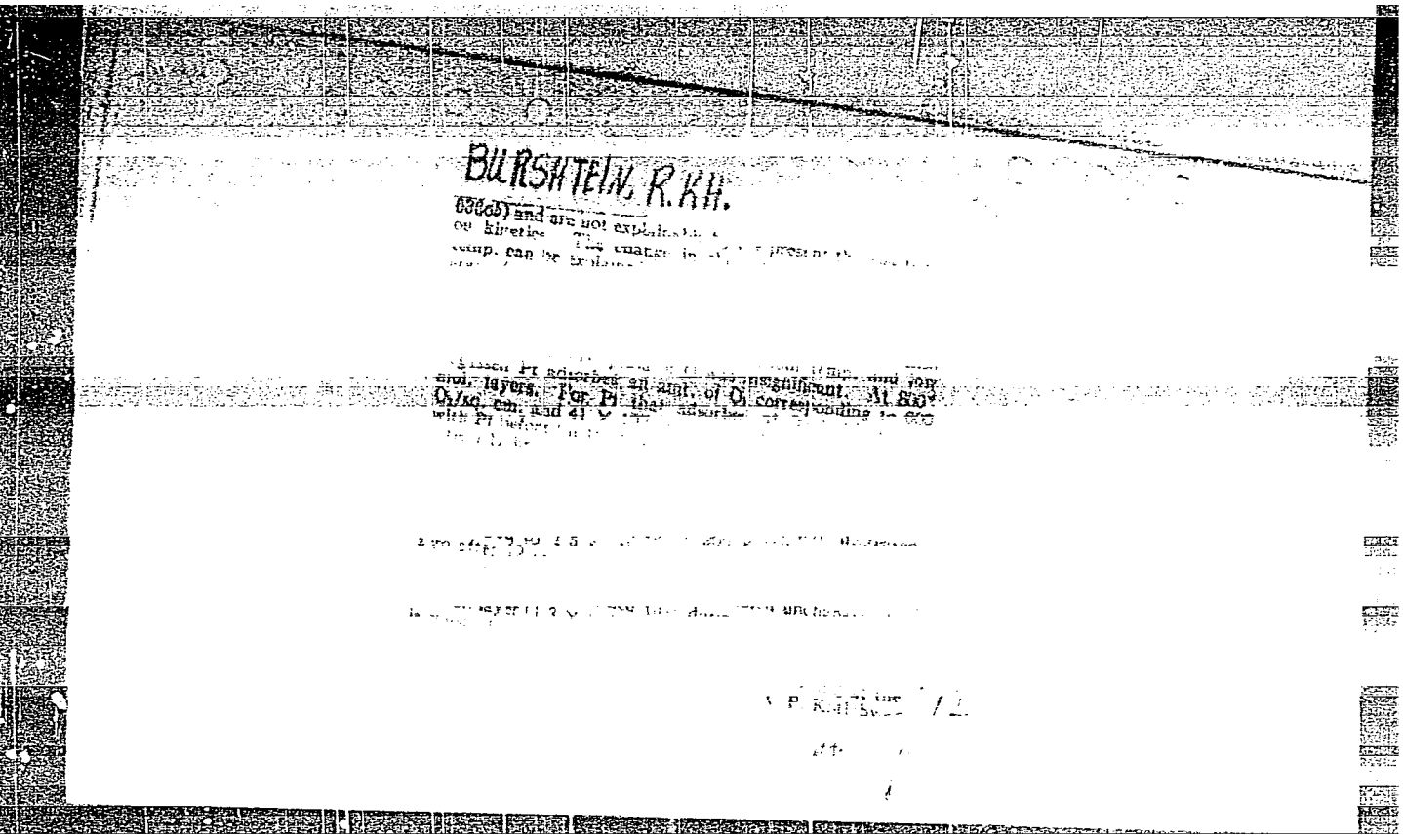
BURSTEIN, R. EH.

Moscow

"Uber die Passivierung von Metallen mit gaeformigem Sauerstoff"
Paper submitted at International Symposium of Passivity of Metals, 2-7 Sep 57, Darmstadt, Germany,

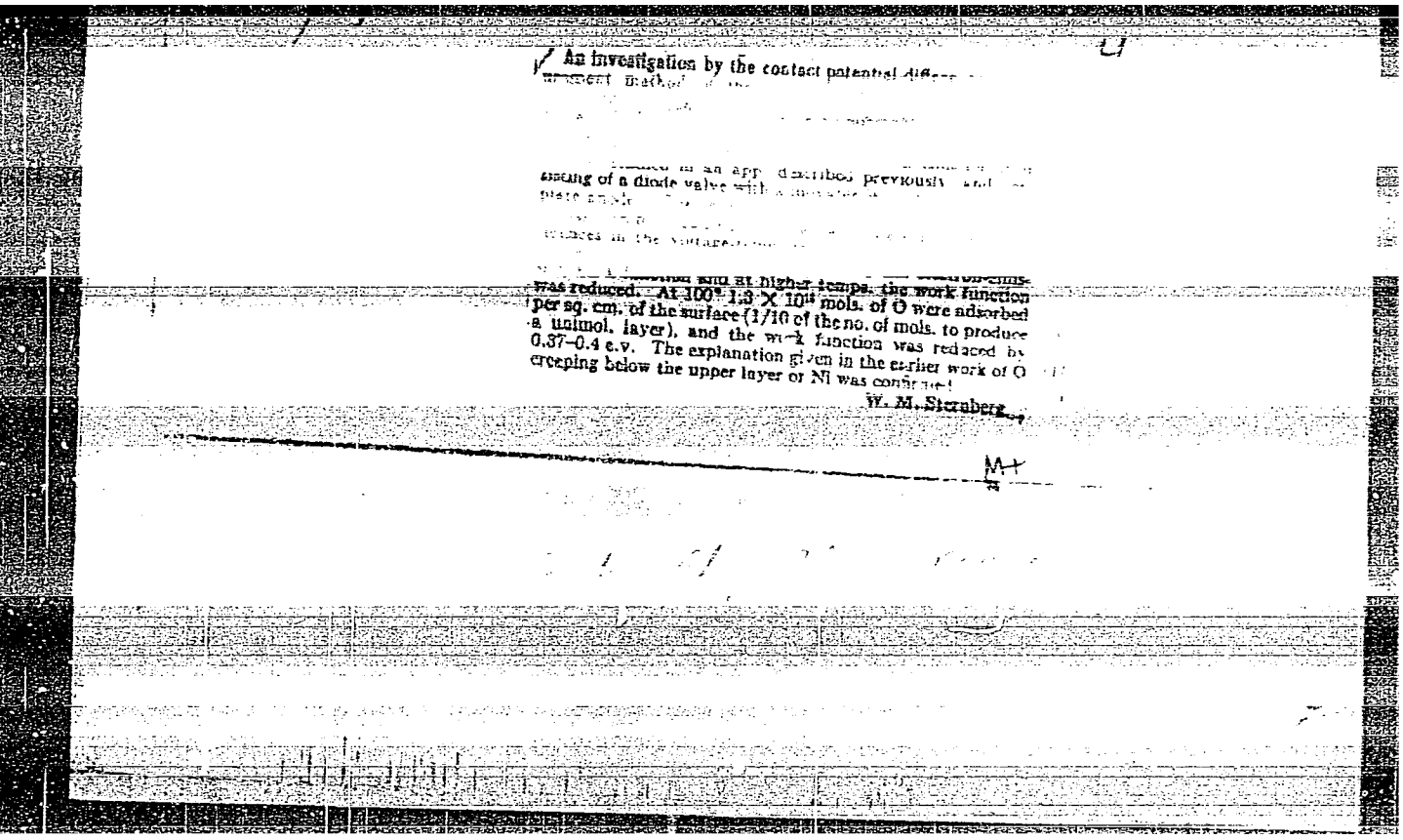
G-3,800,126





BURSHTEYN, R.Kh.

Discussion. Probl. kin. i kat. 9:91-92 '57. (MIRA 11:3)
(Radioactive tracers) (Chemical reaction--Conditions and laws)



An investigation by the contact potential [illegible]

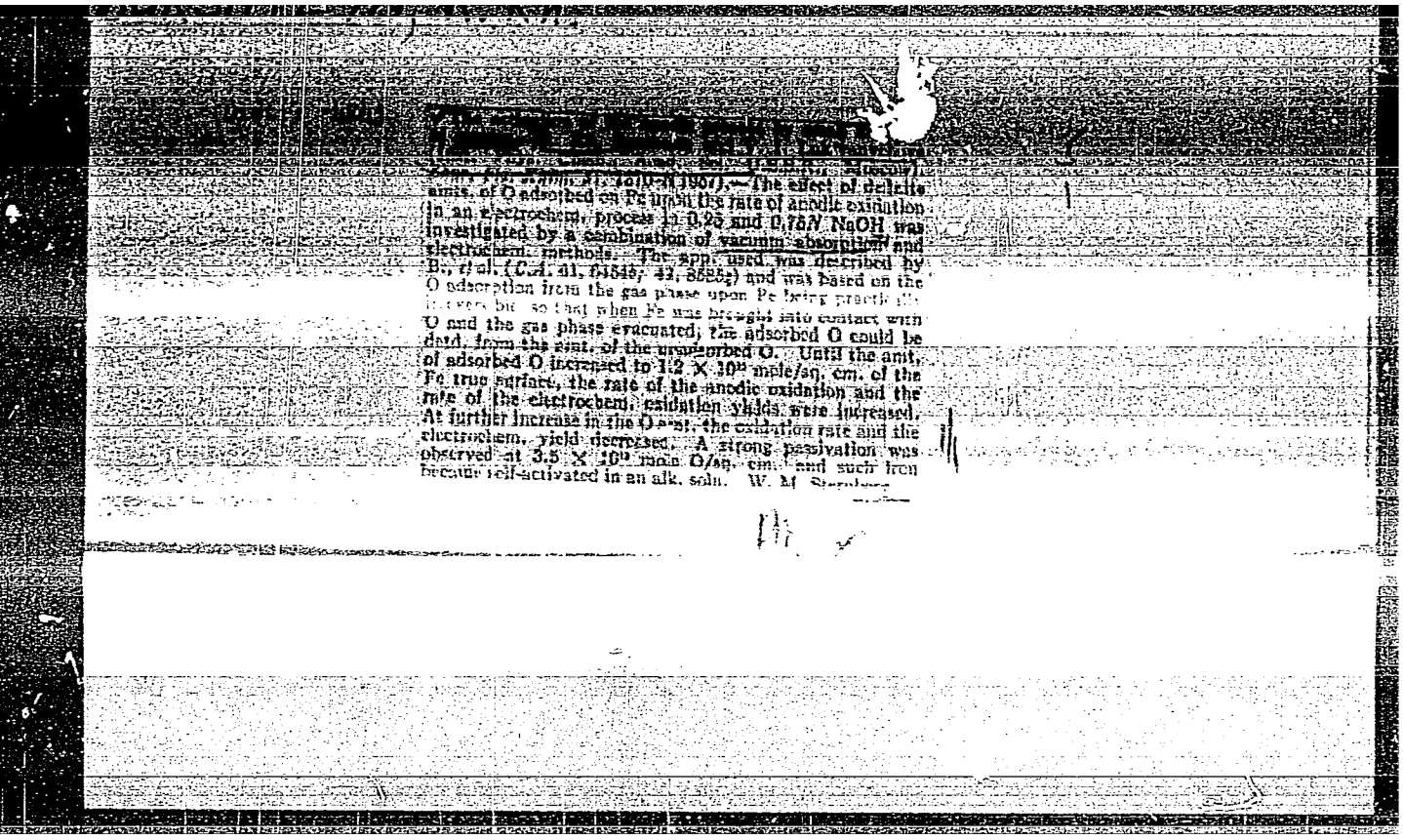
[illegible] was reduced. At 100° 1.3×10^{14} mols. of O were adsorbed per sq. cm. of the surface (1/10 of the no. of mols. to produce a unimol. layer), and the work function was reduced by 0.37–0.4 e.v. The explanation given in the earlier work of O creeping below the upper layer of Ni was confirmed.

W. M. Sternberg

BURSHTEYN, R.Kh.

SHURMOVSKAYA, N.A.; BURSHTEYN, R.Kh.

The iron electrode in a voltaic cell. Zhur.prikl.khim. 30 no.8:1176-1184 Ag '57. (MIRA 11:1)
(Electric batteries)



amts. of O adsorbed on Fe upon the rate of anodic oxidation in an electrochem. process in 0.25 and 0.78*N* NaOH was investigated by a combination of vacuum absorption and electrochem. methods. The app. used was described by B., *et al.* (*C.A.* 41, 6154*i*; 42, 8628*g*) and was based on the O adsorption from the gas phase upon Fe being practically [illegible] so that when Fe was brought into contact with O and the gas phase evacuated, the adsorbed O could be detd. from the amt. of the unadsorbed O. Until the amt. of adsorbed O increased to 1.2×10^{15} mole/sq. cm. of the Fe true surface, the rate of the anodic oxidation and the rate of the electrochem. oxidation yields were increased. At further increase in the O amt. the oxidation rate and the electrochem. yield decreased. A strong passivation was observed at 3.5×10^{15} mole O/sq. cm. and such Fe became self-activated in an alk. soln. W. M. Sternberg

BURSHTEYN, R. KH.

76-1-29/32

AUTHORS: Burshteyn, R. Kh. , Larin, L. A.

TITLE: An Apparatus for Measuring the Contact Potential Differences by Means of the Condenser Method (Pribor dlya izmereniya kontaktnoy raznosti potentsialov kondensatornym metodom)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 1, pp.194-195 (USSR)

ABSTRAAT: The deficiency of the condenser method, especially at its application in the vacuum, is represented by the difficulty to remove disturbances caused by the application of electromagnetic devices for the vibration of electrodes (being in the vicinity of the electrodes investigated). Here, a device is described, which permits to avoid the deficiencies mentioned. A platinum plate soldered with glass Nr 23 from all sides serves as a comparison-electrode. The thickness of the glass cover amounts to 0,5 - 0,7 mm. The electrodes are 1,5 x 1,5 cm in dimensions. The distance between them amounts to 1 - 1,5 mm. The whole apparatus consists of molybdenum-glass, to which the glazed electrode is soldered by means of a transition glass. The vibration of the electrode investigated is effected by means of an electromagnet and a glass-silphon connected with the tube 4 by interior soldering on. That renders possible to mount the electromagnet in a considerable distance from the electrodes. The

Card 1/2

An Apparatus for Measuring the Contact Potential Differences by Means of the Condenser Method

apparatus is contained in a box serving as a screen, and the electromagnet is arranged at the upper wall, outside of the box. A small rod of iron is introduced into the tube and its oscillations in the magnetic field cause the vibration of the electrode. The apparatus is joined to a vacuum plant by means of a side tube 7. The apparatus was tested on occasion of measuring the effect of the oxygen and hydrogen adsorbed upon the action of the electron-output of nickel and germanium. The results were satisfactory. There are 1 figure, and 5 references, 2 of which are Slavic.

ASSOCIATION: AS USSR. Institute of Physical Chemistry, Moscow
(Akademiya nauk SSSR. Institut fizicheskoy khimii, Moskva)

SUBMITTED: April 3, 1957

AVAILABLE: Library of Congress

BURSHTEYN R. Kh.

[illegible] I.

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...; [sbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.N. Frumkin (Resp. Ed.) Academician, O.A. Yesin, Professor; S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, S.I. Zhdanov (Resp. Secretary); B.N. Kabanov, Professor; Ya. M. Kolotyrkin, Doctor of Chemical Sciences; V.V. Losev, P.D. Lukovtsev, Professor; Z.A. Solov'yeva; V.V. Stender, Professor; and G.M. Florianovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodepositon and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included here have been published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

Card 24/34

BURSHTEYN, R. KH.

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...; [sbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.
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Card 31/34

Card 32/34

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75671
SOV/80-32-10-20/51

AUTHORS: Galkina, N. I., Popova, G. M., Kondrashov, D. L., Burshteyn, R. Kh.

TITLE: Baked Electrodes Depolarized by Air

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2247-2252 (USSR)

ABSTRACT: Carbon electrodes for electric cells should possess a highly porous structure to assure efficient depolarization by air. It was recommended (Burshteyn, R. Kh., Veselovskaya, I. Ye., Collection of Studies on Alkaline Cells with Air Depolarization--Sbornik statey po shchelochnym elementam vozdushnoy depolyarizatsii --Gosenergizdat, 1947, p 57) that such electrodes be made with binding agents which are converted on baking into activated carbon, as they show a higher electrical conductivity, high porosity, and mechanical strength, and are cheaper than electrodes made with binders requiring organic solvents. The present study deals with the manufacturing and the effects of the electrode structure on their electrochemical

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characteristics. Commercial carbon, type 8/60, was found to be suitable for the manufacture of baked electrodes due to its highly porous, fine structure; samples prepared at 900° with 7% charring and activated in CO_2 at 900-950° gave 5 milliamp/cm sq at 1.2 v in reference to zinc electrode. Other investigations were made with electrodes made of a mixture of 50% EAU activated birch carbon and 50% lamp black, with molasses, pitch, or tar binders. After baking and activation, the percentage of charring was determined, as this constant characterized the adsorption capacity of the electrode. It was established that molasses gave a higher porosity than tar or pitch. The electrochemical activity increased with the degree of charring. The rate of oxygen reduction on the electrode and the activity of the electrode were in linear relation up to a charring of 30%. The highest electrochemical activity was shown by electrodes with the most fine porous structure. A linear relation was observed also between the voltage and the current density in the range up to $4.5 \cdot 10^{-3}$ amp/cm sq. The investigation of the working life at

Card 2/3

1.2 v in reference to zinc electrode showed that the electrode with finer pores (the degree of charring being equal) worked longer and showed a higher current density. Sample series prepared from carbon mixtures above but with a tar binder, and with charring of 10%, gave a voltage of 1.16 v under a load of 1 amp which corresponded to a current density of 20 milliamp/cm². The above experiments proved that baked electrodes of fine porous structure and containing activated carbon can be used successfully in electric cells with air depolarization. There are 9 figures; 2 tables; and 5 references, 1 U.S., 4 Soviet. The American reference is: Ritter, H. L., Drake, L. C., Ind. Eng. Ch., Anal. Ed., 17, 787 (1945).

ASSOCIATION: Institute of Electrochemistry, Academy of Sciences, USSR (Institut elektrokhimii AN SSSR)

SUBMITTED: July 18, 1958

Card 3/3

28 (4)

AUTHORS: Burshteyn, R. Kh., Kondrashov, D. L. SOV/76-33-7-31/40

TITLE: A Manometer for Measuring the Pressure of Aggressive Gases

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1653 - 1654 (USSR)

ABSTRACT: For the purpose of measuring the pressure of halogen gases a gauge of the type Pirani (Fig 1) was designed in which a metal wire coated with a thin glass layer is fastened (Ref 1). A copper wire 10 μ thick approximately was used, which was coated with a glass layer 2 μ thick. The wire was 40 cm long. It was fastened in the gauge between two crossbeams, and the two ends, which were connected with the measuring device, were lead through two funnels filled with Wood's alloy. During the pressure measurements the temperature of the glass-wall of the gauge was maintained at 20°C, and the copper wire was heated to 120°C. The glass coating of the wire did not affect its inertion since its resistor attained a constant value within 2 or 3 sec, which was 51Ω in vacuum. A calibration curve of the gauge with respect to air is plotted (Fig 2). Measurements showed that the vapor tension of chlorine at ~ 140° amounts to

Card 1/2

5·10 torr, and at - 156°C, $1 \cdot 10^{-3}$ torr. The device under review was used for measurements of chlorine pressure in adsorption investigations. There are 2 figures and 1 Soviet reference.

ASSOCIATION: Akademiya nauk SSSR, Institut elektrokhimii, Moskva (Academy of Sciences of the USSR, Institute of Electrochemistry, Moscow)

SUBMITTED: January 7, 1959

5(4)
SOV/20-129-1-47/64

AUTHORS: Shurmovskaya, N. A., Burshteyn, R. Kh.

TITLE: Effect of the Degree of Nickel Degasification on the Work Function of an Electron

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 1, pp 172-173 (USSR)

ABSTRACT: In a previous paper the authors investigated the effect of oxygen adsorbed on nickel on the work function of an electron (Ref 1). For this purpose the metal was degassed in a vacuum of 10^{-7} torr. By reason of data given in publications (Ref 4), according to which this vacuum is not sufficient for complete degasification, the influence of the vacuum on the difference in the contact potentials of pure metals and metals having gas adsorbed on the surface was investigated. For this, the system Ni - O was again chosen. A diode with a tungsten cathode and an anode of nickel of spectral purity was applied for determining the differences in contact potentials. The measuring device was separated from the vacuum apparatus by means of the tin seal by I. I. Tret'yakov (Ref 6). As shown in figure 1, the difference

Card 1/2

Effect of the Degree of Nickel Degasification on the Work Function of an Electron

in contact potentials is independent of the height of vacuum (10^{-7} to 10^{-9} torr). The volt-ampere characteristic of nickel (Fig 2) was also constant at 10^{-7} and 10^{-9} torr. Thus the vacuum of 10^{-7} torr applied by the authors in the previous paper did not affect the accuracy of the results. This is in agreement with data given in references 7 and 8. These results are in contradiction to the results of the measurements by means of an electron gun given in references 4 and 9. The electric field of the emission microscope is believed to be the source of error. There are 2 figures and 9 references, 5 of which are Soviet.

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry of the Academy of Sciences, USSR)

PRESENTED: June 23, 1959, by A. N. Frumkin, Academician

SUBMITTED: June 22, 1959

Card 2/2

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~~5(4)~~

S/020/60/130/03/023/065
B004/B011

AUTHORS: Burshteyn, R. Kh., Larin, L. A.

TITLE: The Influence of Adsorbed Oxygen on the Work Function of an Electron Leaving Germanium

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 3, pp 565-568 (USSR)

ABSTRACT: In a previous paper (Ref 5) the authors had investigated the kinetics of oxygen adsorption on germanium. In order to investigate the influence exerted by different stages of chemosorption on the properties of the surface, also their influence on the work function of the electron was investigated. The contact potential difference was measured by means of a glass-coated standard electrode (Ref 6). In consequence of lower gas adsorption this one worked in a more stable manner than metal electrodes and permitted the work function to be measured within a wide temperature range. The linear dependence of the contact potential difference on the oxygen pressure logarithm in the range of 10^{-3} - 100 torr is shown in figure 1. No difference was found in measurements between n- and p-germanium.

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The Influence of Adsorbed Oxygen on the Work Function of an Electron Leaving Germanium

S/020/60/130/03/023/065
B004/B011

These results do not fit those obtained by J. A. Dillon, H. E. Farnsworth (Refs 2,3); this is explained by the fact that those scientists had worked only in a pressure range of 1.10^{-7} - 2.10^{-5} torr. Adsorption of O on Ge occurs in two stages, a rapid one ($2Ge + O_2 \longrightarrow 2GeO$) which leads to the formation of a monoatomic layer and is terminated within 5 minutes at 10^{-3} torr, and a slow stage ($2GeO + O_2 \longrightarrow 2GeO_2$) which at 0.07 torr takes days to be concluded. Below a pressure of 10 torr the oxygen is adsorbed irreversibly, as the contact potential difference remains constant with subsequent evacuation to 10^{-6} torr. Moreover, the authors investigated the behavior of adsorbed oxygen at different temperatures (Fig 2). In agreement with reference 9, a drop in the work function was observed after heating the germanium in oxygen-free gas to 100 - 400°. As no desorption occurs, this is explained by the reaction $GeO_2 + Ge \longrightarrow 2GeO$. If germanium is heated in oxygen-

The Influence of Adsorbed Oxygen on the Work Function of an Electron Leaving Germanium

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containing atmosphere, the work function rises due to increasing thickness of the GeO_2 layer. The authors thank

Academician A. N. Frumkin for having participated in discussing the results. There are 2 figures and 11 references, 3 of which are Soviet.

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry of the Academy of Sciences, USSR)

PRESENTED: October 7, 1959 by A. N. Frumkin, Academician

SUBMITTED: October 7, 1959

Card 3/3

81729
S/020/60/133/01/41/070
B004/B007

5.2200

AUTHORS: Burshteyn, R. Kh., Larin, L. A., Voronina, G. F.

TITLE: The Influence Exerted by Water Vapor Upon the Reaction Between Germanium and Oxygen

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 1, pp. 148 - 151

TEXT: In the preceding papers (Refs. 1, 2) the authors proved that in the reaction between Ge and O a protective layer forms on Ge, which corresponds to the adsorption of two O atoms on 1 atom of Ge. In the first, fast stage of the adsorption, a monomolecular layer of GeO is formed, while in the slow stage a monomolecular layer of GeO_2 forms. As the properties of germanium semiconductors change under the action of moisture (Ref. 3), the authors investigated this effect in the following experiments: Oxygen was adsorbed on oxide-free germanium, after which water vapor was introduced into the experimental apparatus which, after some time was again removed by freezing out or sucking out. Fig. 1 shows

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that by the action of water vapor, the adsorbing capacity of Ge for O again rises. The passivating effect of the protective layer is disturbed, and thicker oxide layers are formed. This effect was investigated by measuring the difference of the contact potentials (Fig. 2). In pure Ge a linear dependence of the work function on log P_{H_2O} exists in the interval of partial pressure of from P_{H_2O} 1.10^{-3} to 7 torr. With a further increase of P_{H_2O} in the case of an increase of the relative moisture from 50 to 100 %, a rapid increase of the work function, however, occurs. This effect is reversible. After the water vapor has been pumped off, the work function again assumes the value that corresponds to the pure germanium surface. In the case of an oxidized germanium surface, however, the change of the work function as the result of a disturbed structure of the protective layer is only half as great. Fig. 3 shows that at high pressure, the increase of the difference of the contact potential is caused by an increased adsorption of water vapor. Fig. 4 shows the result of experiments with alternating adsorption of oxygen and water vapor. No steady state

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The Influence Exerted by Water Vapor Upon the Reaction Between Germanium and Oxygen

S/020/60/133/01/41/070
B004/B007

sets in because after every contact with water vapor the protective layer is destroyed and germanium becomes capable of adsorbing further oxygen. In this way, the authors explain the aforementioned change on germanium semiconductors in a moist atmosphere. If, however, on germanium which is oxidized on the surface, trichloromethylsilane is adsorbed and polymerized at 150°C, the action of water vapor may be eliminated because the layer has become hydrophobic. The authors thank A. N. Frumkin for his interest in the present investigation. There are 4 figures and 7 references: 3 Soviet, 3 US, and 1 Japanese.

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry of the Academy of Sciences, USSR)

PRESENTED: January 28, 1960 by A. N. Frumkin, Academician

SUBMITTED: January 25, 1960

Card 3/3

LUK'YANYCHEVA, V.I.; BURSHTEYN, R.Kh.

Impedance measurement of an iron electrode in alkaline solutions. Zhur.fiz.khim. 35 no.6:1343-1350 Je '61. (MIRA 14:7)

1. Akademiya nauk SSSR, Institut fizicheskoy khimii.
(Electrodes, Iron)

S/020/61/136/005/022/032
B101/B206

15.8114 also 1164, 1043, 1143

AUTHORS: Berlin, A. A., Boguslavskiy, L. I., Burshteyn, R. Kh., Matveyeva, N. G., Sherle, A. I., and Shurmovskaya, N. A.

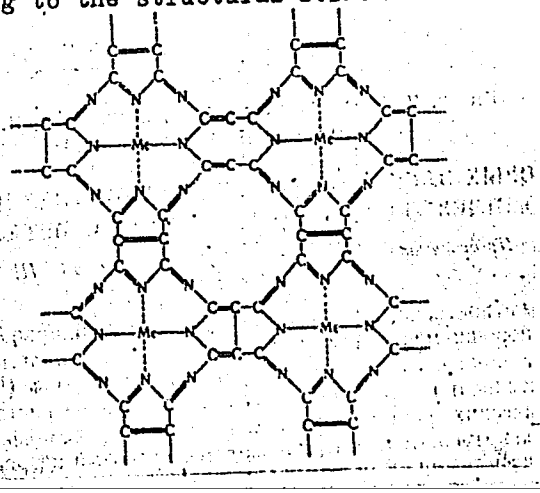
TITLE: Some electrophysical properties of polymer complexes of tetraethylene cyanide with metals

PERIODICAL: Doklady Akademii nauk SSSR, v. 136, no. 5, 1961, 1127-1129

TEXT: The authors deal with the chelate compounds between tetraethylene cyanide and metals. The infusibility and insolubility of these compounds led to the proposal that coatings and plastics be manufactured from them (Ref. 3). The electrophysical properties of polymeric chelate films chemically bonded to metals, which were obtained by treatment of copper, iron, and nickel sheets with tetraethylene-cyanide vapor, were studied in this paper. The degreased and, in some cases, also electropolished or etched metal foils were exposed to tetraethylene-cyanide vapor at 10^{-5} mm Hg and 150 to 400°C. A film firmly sticking to the metal developed, the thickness of which was calculated from the specific gravity of the

Some electrophysical properties ...

polymer and from the weight of the film as being $5 \cdot 10^{-6} - 3 \cdot 10^{-5}$ cm. (Owing to the poor combustibility of the chelate film, microanalysis produced too low carbon values). The infrared spectra of the copper complex, taken by Yu. Sh. Goshkovskiy and N. D. Kostrova, showed the complete absence of maxima in the range 800 - 2300 cm^{-1}. A "parquet" structure of the polymer according to the structural formula



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Some electrophysical properties ...

is concluded therefrom. The electrophysical properties of the films were checked by means of alternating current of 200 cps - 0.2 Mc/sec. The metal covered by the film was immersed in mercury so that the film formed the dielectric of a capacitor, the plates of which consisted of the metal and of mercury. Measurements were made at 10^{-5} mm Hg because the presence of air influenced the results. This effect needs further research. The specific conductivity σ, the film capacitance and its temperature dependence, duration of heating, and the method of metal-surface treatment were determined. The following data are given for films of iron obtained after 3 hr heating at 250°C in tetraethylene-cyanide vapor: film thickness $3 \cdot 10^{-6}$ cm; $\sigma = 3 \cdot 10^{-9}$ $ohm^{-1} \cdot cm^{-1}$; effective dielectric constant ε (at 3000 cps) = 7. After further 3 hr of heating, σ increased to $3 \cdot 10^{-8}$ $ohm^{-1} \cdot cm^{-1}$, and ε to 36. Increase of temperature from 250 to 450°C and heating for 10 hr produced the following values: $\sigma = 5 \cdot 10^{-8} - 5 \cdot 10^{-6}$ $ohm^{-1} \cdot cm^{-1}$, $\varepsilon = 70$. The sign of the emf indicates that the film possesses p-type conductivity. $\log \sigma = f(1C^3/T)$ is represented in Fig. 2. Measurements between -40 and +220°C yielded two linear sections.

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Some electrophysical properties ...

The first lies between -40 and +30°C and corresponds to an activation energy of from 0.07 to 0.12 ev, while the second (30 to 250°C) corresponds to an activation energy of from 0.21 to 0.28 ev. The function represented is similar to that obtained for semiconductors with impurity conductivity. R and ε as functions of the logarithm of the frequency ν between 400 cps and 0.2 Mc/sec were also measured. Results are shown in Fig. 3. It is noted that R and the film capacitance decrease with increasing voltage when a constant voltage is applied. When a direct current is conducted through an alcoholic solution of copper sulfate, metallic copper firmly adhering to the film is deposited on the polymer film formed on iron. The high ε values indicate that the polarization of conductive macromolecules could be in question. The authors are preparing a study on the complex dielectric constant at higher frequencies. There are 4 figures and 3 Soviet-bloc references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences USSR). Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry, Academy of Sciences USSR)

21502

S/020/61/137/004/027/031
B101/B208

24.2500 2209, 1160, 1137

AUTHORS: Popova, G.M., Shurmovskaya, N.A., and Burshteyn, R.Kh.

TITLE: Effect of adsorbed halogens on the work function of electrons in iron

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 4, 1961, 904 - 907

TEXT: It was found in the authors' laboratory that the work function of electrons in iron is affected by adsorbed oxygen, amount and sign of the potential difference depending on the conditions of the interaction between gas and metal (Ref. 1: ZhFKh, 24, 214 (1950); Ref. 2: ZhFKh, 31, 1150 (1957); Ref. 3: DAN, 81, 1093 (1950)). A study has now been made of the influence of chlorine and iodine upon the work function. The potential difference was measured by means of a vibration condenser. Molybdenum was used as reference electrode. Platelets of 20 x 20 x 0.2 mm from spectrally pure Hilger iron were studied. Chlorine vapor was obtained by thermal decomposition of gold chloride, and iodine vapor by heating of iodine. The vapors were condensed in a receiver cooled by li-

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quid N_2. The chlorine vapor was dosed in ampuls by means of different coolants: solid isopentane (melting point -142°C, vapor pressure p of Cl 4.10^{-2} mm Hg); solid ethanol (m.p. -106°C; p = 5 mm Hg); and solid CO_2 + + acetone (t = -78°C; p = 63 mm Hg). The pressures of iodine vapor were 0.01 and 0.07 mm Hg. Iodometric analysis of the chlorine and iodine contents of the ampuls confirmed the values determined from vapor pressure. The iron electrode was reduced several times at 400°C with H_2, and degassed at 2.10^{-6} mm Hg and by heating to 700°C with high-frequency current. The difference of the contact potential between pure Fe and Fe which had adsorbed chlorine (or iodine) was measured. 1) at different p of the gas, and 2) at constant p and temperatures of 20 - 300°C. Fig. 1 presents the results for chemosorbed Cl in vacuo, Fig. 2 those for gaseous chlorine, Fig. 4 those for chemosorbed I. The mean values are given. The maximum deviation from the mean value was 25%. The change of the work function is believed to be due to irreversible chemosorption. In the entire range of temperatures, the work function increased with increasing p of chlorine. The increased work function at room temperature and on interaction with Cl

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B101/B208

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is explained by the formation of dipoles at the iron surface, the negative pole of which points outwardly. Sublimation of iron chlorides occurs with rising temperature. Besides, it is assumed that either Cl atoms penetrate into the iron, or iron atoms appear on the chloride surface. If Cl appears in the gaseous phase, Cl is adsorbed additionally. Unlike what is the case with Cl the maximum increase of the work function in I occurred at 20°C. It is assumed that on adsorption of I at room temperature, one electron passes from metal to halogen, and causes a negative charging of the surface. R.Kh. Burshteyn and L.A. Larin (Ref. 8: ZhFKh, 32, 194 (1958)) are mentioned. There are 4 figures and 13 references: 5 Soviet-bloc and 8 non-Soviet-bloc. The 3 references to English language publications read as follows: C. Oullet, E.K. Rideal, J. Chem. Phys., 3, 150, (1935); J.S. Anderson, D.F. Klemperer, Nature 184, 899 (1959); R. Suhrmann, Advances in Catalysis, 9, 497 (1957).

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry of the Academy of Sciences USSR)

PRESENTED: November 9, 1960 by A.N. Frumkin, Academician

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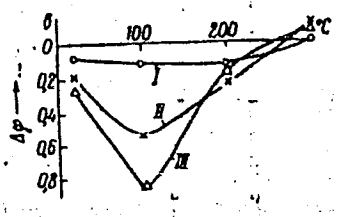
Effect of adsorbed halogens ...

SUBMITTED: October 30, 1960

Fig. 1. Influence of the temperature of iron with chemosorbed chlorine in vacuo upon the difference in the contact potential.
Legend: (I) Chemosorption at 20°C, $p = 5.10^{-4}$ mm Hg; (II) dto. at $p = 5.10^{-2}$ mm Hg; (III) dto. at $p = 6.10^{-1}$ mm Hg



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21502

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B101/B208

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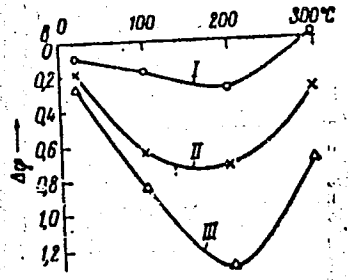
Fig. 2. Change of the difference in the contact potential as a function of the temperature of interaction between chlorine and iron at different chlorine pressures in the gaseous phase.
Legend:
(I) $p = 5.10^{-4}$ mm Hg;
(II) $p = 5.10^{-2}$ mm Hg;
(III) $p = 6.10^{-1}$ mm Hg



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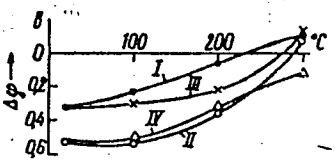

Fig. 4. Change of the difference in the contact potential as a function of the heating temperature of iron containing chemosorbed iodine. Legend: (I) Heating in vacuo after iodine chemosorption at $p = 1.10^{-2}$ mm Hg and 20°C; (II) dto. at $p = 7.10^{-2}$ mm Hg and 20°C; (III) heating at an iodine pressure of $p = 1.10^{-2}$ mm Hg in the gaseous phase; (IV) dto. at $p = 7.10^{-2}$ mm Hg

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24,7700

25483
S/020/61/139/001/015/018
B103/B226

AUTHORS: Burshteyn, R. Kh. and Sergeyev, S. I.

TITLE: Effect of oxygen adsorbed on the germanium surface upon the lifetime of minority carriers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 1, 1961, 134-136

TEXT: In their laboratory, the authors determined that the slow and rapid stages of chemisorption of oxygen on the germanium surface differently affect the work function of the electron. The rapid stage corresponds to the formation of a monomolecular layer of the GeO type; the slow one, however, to that of the GeO_2 type on the surface of germanium (R. Kh. Burshteyn et al. Ref. 1: [illegible], 130, No. 4, 801 (1960); R. Kh. Burshteyn et al. Ref. 2: ibid. No. 3. 565 (1960)). The present study explains the effect of these two types of oxygen chemisorption upon the lifetime of minority carriers in germanium. For this purpose, lifetime has been investigated: 1) on the surface of pure germanium; 2) on that which has chemisorbed oxygen. The authors emphasize the fact that H. H. Madden and H. E. Farnsworth (Ref. 3: Phys. Rev., 112, 793 (1958)) have studied the influence

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of oxygen under conditions not being comparable with those of their own experiments (Refs. 1 and 2). To be able to compare the determined lifetime with the kinetics of chemisorption and work function, the lifetime of minority carriers has been measured under the conditions mentioned in Refs. 1 and 2. The "photogalvanomagnetic" (fotogal'vanomagnitnyy) method (A. F. Gibson et al. Ref. 4: Progr. in Semiconductors. 1. London, 1958, p. 165; T. I. Galkina, Ref. 5: Fiz. tverd. tela, 1, No. 2, 216 (1959)). served for the purpose. An electromagnet (B = 3200 gauss) produced a magnetic field; a motion-picture lamp of 500 w producing light with a modulation frequency of 60 cps served as a light source. The signal was amplified by a narrow-band amplifier having an amplification factor of 60 cps. Rectangular, laminated samples of p-type germanium, ground and pickled in H_2O_2 (ρ = 20 ohms·cm, L = 1.5 mm and ρ = 48 ohms·cm, L = 3.2 mm) were studied by means of a special support in the device of Fig. 1. Front contacts 3 served for conducting d.c. through the sample and for collecting the voltage caused by the photogalvanic effect and the photoconductivity. A thermocouple was used for measuring the temperature. The Ge surface was cleaned by a repeated reduction in hydrogen at 400°C and a subsequent degassing in vacuum at 10^{-7} mm Hg. The effect of oxygen chemisorbed at

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different pressures between 20 and 400°C was investigated. Lifetime was measured at room temperature. The rapid chemisorption stage (at 10^{-3} mm Hg) took less than 1 min, while that of the slow stage took several days. With increasing pressure, slow chemisorption is accelerated. Its rate is proportional to the square root of pressure. The different effect of the two chemisorption stages upon the lifetime of minority carriers on the Ge surface has been proved by this study. At oxygen pressures of less than 0.1 mm Hg, lifetime is not affected by chemisorption (according to measurements 5 minutes after beginning of experiments). The rapid chemisorption mainly proceeds under these conditions. At high pressures, causing slow chemisorption to prevail, lifetime is shortened. This shortening is dependent on the time germanium is kept in oxygen. The effect of heating in vacuum: A 1-hr heating of germanium (ρ = 48ohms·cm, L = 3.2 mm) with chemisorbed oxygen in vacuum showed that lifetime increased with increasing heating temperature. This increase is particularly high at 400°C. The value of lifetime after heating is dependent on the duration of heating. A 3-hr heating in vacuum increases the lifetime up to the value of that of a pure germanium surface. Heating of germanium in the presence of oxygen in the gaseous phase (5 mm Hg) shortens the lifetime by 100μsec (at room

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temperature) after heating at 400°C. After comparing their findings, the authors conclude that the rapid chemisorption of oxygen does not affect the lifetime and only little changes the electron yield. On the other hand, the slow chemisorption considerably increases the electron yield due to the formation of a GeO_2 layer on the surface. This layer, however, simultaneously shortens the lifetime. When heating germanium with chemisorbed oxygen in vacuum, thus causing the reaction $GeO_2 + Ge = 2GeO$, the work function decreases; the lifetime, however, is increased. Heating of germanium in oxygen, which causes the work function to be considerably increased, considerably shortens lifetime. The authors think that it is as yet impossible to show clearly how far these results comply with the theory by C. G. B. Garret and W. H. Brattain (Ref. 6: Bell Syst. Techn. J., 35, 5, 1041 (1956)). This theory gives a statement on the connection between the rate of recombination on the surface and the surface charge. The authors' results prove the assumption that the change of lifetime in oxygen adsorption is largely due to the formation of a germanium oxide of the GeO_2 type. The sections of germanium covered by this oxide apparently form the centers of surface recombination. A. V. Rzhanov is thanked for advice in assembling

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the apparatus for galvanomagnetic measurements. There are 3 figures and 6 references: 3 Soviet-bloc and 3 non-Soviet-bloc. The important references to English-language publications are mentioned in the text.

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry of the Academy of Sciences USSR)

PRESENTED: February 24, 1961, by A. N. Frumkin, Academician

SUBMITTED: February 18, 1961

LYUBARSKIY, G.D.; KUL'KOVA, N.V.; BURSHTEYN, R.Kh.; ISAYEVA, G.G.; IVANOVSKAYA, L.N.; SHURMOVSKAYA, N.A.

Specific activity of nickel catalysts and thiophene adsorption. Dokl. AN SSSR 140 no.3:634-633 S '61. (MIRA 14:9)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Predstavleno akademikom S.S.Medvedevym.
(Thiophene) (Adsorption) (Nickel)

L 17919-63 EWP(q)/EWT(m)/BDS AFFTC/ASD WW/JD/JG/AR

ACCESSION NR: AT3002439 S/2935/62/000/000/0034/0055

AUTHOR: Burshteyn, R. Kh.; Larin, L. A.; Sergeyev, S. I.

63
62

TITLE: Effect of oxygen and water vapor on the surface properties of germanium and silicon (Report at the Conference on Surface Properties of Semiconductors, Institute of Electrochemistry, AN SSSR, Moscow, 5-6 June, 1961)

SOURCE: Poverkhnostnyye svoystva poluprovodnikov. Moscow, Izd-vo AN SSSR, 1962, 34-55

TOPIC TAGS: Ge surface property, Si surface property

ABSTRACT: The experimentally-determined rate of chemosorption and effect of oxygen and water vapor adsorbed by Ge and Si are reported. Ge films were cleaned by repeated reduction of Ge in hydrogen with subsequent exhaustion at 10^{-7} -10^{-9} torr and at 400-450 C. The rate-of-oxygen-adsorption curve showed

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that the process, while rapid in the beginning, slowed down after one-half of O_2 was adsorbed. A 2-hr heating in a vacuum at 400 C did not result in any desorption of O_2. Water-vapor adsorption by O_2-treated Ge surface was found irreversible and resulted in the increased ability of Ge to adsorb more O_2. The effect of adsorbed O_2 on the work function was investigated at 10^{-3} -100 torr; it was found that the work function, for both p- and n-Ge, increases upon O_2 adsorption. Irreversible adsorption was observed at pressures up to 10 torr; when the pressure during the adsorption period was increased to 100 torr, both irreversible and reversible types of adsorption were detected. Further experiments revealed that at 1 torr or less, chemosorption of O_2 had no effect on the lifetime of minority carriers; with higher pressures, the lifetime decreased; type GeO oxide is considered responsible for lifetime changes. Principal experiments were repeated with Si instead of Ge. These conclusions are offered: (1) Water vapor impairs the protective oxide film on the Ge surface, which results in a thicker oxide layer that changes the electrophysical properties of semiconductors; (2) The oxide-film impairment is probably connected with the penetration of

L 17919-63
ACCESSION NR: AT3002 39

semiconductor atoms into the oxide surface as a result of water-vapor adsorption. Orig. art. has: 15 figures and 3 formulas.

ASSOCIATION: Institut elektokhimii AN SSSR (Institute of Electrochemistry, AN SSSR)

SUBMITTED: 00 DATE ACQ: 15May63 ENCL: 00

SUB CODE: PH NO REF SOV: 008 OTHER: 021

Card 3/3

BURSHTEYN, R.Kh.; PSHENICHNIKOV, A.G.; SHUMILOVA, N.A.

Mechanism of the operation of diffusion electrodes. Dokl. AN SSSR 143 no.6:1409-1412 Ap '62. (MIRA 15:4)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N.Frumkinym.

(Electrodes)

BURSHTEYN, R.Kh.; KORNACHEVA, G.M.; SHURMOVSKAYA, N.A.

Investigation of the gas corrosion of iron by means of contact difference of potentials. Dokl. AN SSSR 146 no.3:631-634 S '62. (MIRA 15:10)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.

(Iron—Corrosion) (Electromotive force)

BURSHTEYN R. Kh.

BURSTEIN, R. Kh.

"Investigation of the Relationship between the Structure and the Electrochemical Properties of a Porous Gas Electrode."

Report presented at the 14th Annual Meeting of the International Committee on Electrochemical Thermodynamics and Kinetics (CITCE), Moscow, 10-25 Aug 63.

HURSHTEYN, R. Kh.; MARKIN, V. S.; PSHENICHNIKOV, A. G.; CHIZMADZHEV, I. A.; CHIRKOV, Yu. G.

"Investigation of the Relationship between the Structure and the Electrochemical Properties of a Porous Gas Electrode."

Report presented at the 14th meeting CITCE, INTL. COMM. of Electrochemical Thermodynamics and Kinetics, Moscow, 19-25 Aug 63.

Institute of Electrochemistry, Academy of USSR.

PONOMARENKO, Ye.A.; FRUMKIN, A.N.; BURSHTEYN, R.Kh.

Dependence of carbon electrode potential on the pH of a solution under isoelectric conditions. Izv. AN SSSR. Ser.khim. no.9: 1549-1555 S '63. (MIRA 16:9)

1. Institut elektrokhimii AN SSSR.
(Electrodes, Carbon) (Electromotive force)
(Hydrogen-ion concentration)

FOKINA, L.A.; SHURMOVSKAYA, M.A.; BURSHTEYN, R.Kh.

Investigation of the reaction of oxygen with activated carbon by the method of contact potential difference. Kin.i kat. 4 no.1:143-148 Ja-F '63. (MIRA 16:2)

1. Institut elektrokhimii AN SSSR.
(Oxygen) (Carbon, Activated) (Electromotive force)

FRUMKIN, A.N., akademik; PONOMARENKO, Ye.A.; BURSHTEYN, R.Kh.

Chemisorption of oxygen and adsorption of electrolytes on activated carbon. Dokl. AN SSSR 149 no.5:1123-1126 Ap '63. (MIRA 16:5)

1. Institut elektrokhimii AN SSSR.
(Oxygen) (Electrolytes) (Adsorption)

BURSHTEYN, R. Kh.; SHURMOVSKAYA, N. A.

"The effect of electro-negative gases on the work function of a metal."

report submitted for presentation at the Intl Conf on Physics & Chemistry of Solid Surfaces, Providence, 21-26 Jun 64.

ACCESSION NR: AP4010035 S/0062/64/000/001/0017/0026

AUTHOR: Tarasevich, M. R.; Shumilova, N. A.; Burshteyn, R. Kh.

TITLE: Studies on oxygen adsorption and ionization by the method of triangular voltage impulses Report 1. Adsorption and desorption of oxygen at the silver electrode in anode and cathode polarization

SOURCE: AN SSSR. Izvestiya. Ser. khim., no. 1, 1964, 17-26

TOPIC TAGS: oxygen adsorption, oxygen desorption, oxygen silver electrode reaction, triangular voltage pulses, electrode reactions, electrode potential curves, ionization, oxygen bond changes, Ag sub 2 O, AgO, Ag sub 2 O sub 3, oxygen silver reaction kinetics

ABSTRACT: In the determination of short-lived products of electrode reactions, it has been found that triangular or saw-toothed voltage pulses placed on the electrode will obtain i-φ curves which differ essentially by their outline from galvanostatic charge curves. To study the kinetics of oxygen and hydrogen adsorption and desorption and formation and destruction of oxides at the silver electrode,

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ACCESSION NR: AP4010035

single and periodic triangular voltage pulses were used in a 1N KOH solution, in the range of 0.05-2.0 V and a rate of change of the potential of 0.04 ÷ 300 V/sec. The equipment is described (teflon-insulated silver electrodes, inert atmosphere, curves photographed after they became stationary). A 1 V/sec potential change and a 0.05-1.1 V potential range led to curves attaining a maximum of 0.32 V at the cathode and 0.36 V at the anode, corresponding to adsorption and desorption of hydrogen. Reducing this amplitude to 0.05-0.5 V apparently led to reduction of priorily adsorbed oxygen. Oxygen was adsorbed at the 1.1 ÷ < 0.5 V range; at a 0.7 ÷ 0.8 V potential range and a rate of 0.1 V/sec a maximum was observed corresponding to a change in the oxygen bond with the silver. The form of the i-φ curves at low speed rates of the applied potential was determined to a considerable degree by chemoaccumulation of oxygen whose bond energy with the surface was relatively high, while desorption and adsorption proceeded with considerable overvoltage. In fact, the i-φ curves at a speed of 1 V/sec and 0.1 V/sec had considerable hysteresis. With increase of the rate of change of the potential from

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10-100 V/sec the degree of filling of the silver surface with oxygen changed almost linearly with the potential in the range of its adsorption and desorption. The lesser the changes in the potential during electrode polarization with periodical pulses, the larger the number of places on the electrode surface freed from adsorbed oxygen during the cathode half-period. The formation and reduction of the oxides Ag_2O, NgO and Ag_2O_3 was determined by the same method. Formation of the phase oxide apparently follows accumulation on the electrode surface of a large amount of adsorbed oxygen. Upon retaining φ = 1.3 V, this adsorbed oxygen will then pass into the crystalline oxide stage and this will lead to a quasi stopping of adsorption. "In conclusion, we wish to express our deep gratitude to A. N. Frumkin for his constant attention to this work." Orig. art. has: 8 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 14Jun63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: CH, PH NO REF SOV: 012 OTHER: 007

Card 3/3

SHURMOVSKAYA, N.A.; BURSHTEYN, R.Kh.; MIROLYUBOVA, N.S.; KORNACHEVA, G.M.

Work function of an iron electron as influenced by absorbed fluorine. Dokl. AN SSSR 154 no.4:926-928 F '64.
(MIRA 17:3)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.

BURSHTEYN, R. Kh.

"The chemisorption and oxidation of hydrocarbons on a platinum electrode."

report submitted for Intl Mtg on Fuels Cells Research & Their Applications, Brussels, 21-24 Jun 65.

Academy Sci (Moscow Leninskiy Prospekt)

L 55137-65 EWT(m)/EWP(1)/EWG(m)/T/EWP(t)/EWP(b)/EWP(z)/EWA(c) Pad IJP(c) RWH/

ACCESSION NR: AP5012346 JD/HW UR/0364/65/001/004/0418/0421
541.138.2:546.11

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27
C

AUTHOR: Pshenichnikov, A. G.; Shnayder, G. I.; Burshteyn, R. Kh.

TITLE: Electrochemical oxidation of hydrogen on partially submerged smooth metal electrodes

SOURCE: Elektrokhimiya, v. 1, no. 4, 1965, 418-421

TOPIC TAGS: hydrogen, oxidation, nickel, electrode

ABSTRACT: The purpose of this study was to find direct evidence for the existence of a thin film of electrolyte on an electrode partially immersed in a liquid, and to determine the thickness of this layer. The investigations were carried out with [illegible] gas phase on a partially immersed [illegible]

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periments were carried out in the 21-72°C interval. Measurements of potential were made with respect to the hydrogen electrode in the [illegible] current measurements [illegible] the thickness of the electrolyte [illegible] which were used was found to be $1.8 \cdot 10^{-5}$ cm and $2.5 \cdot 10^{-5}$ cm respectively. [illegible] authors wish to express their gratitude to Academician A. N. [illegible]

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry, Academy of Sciences, SSSR)

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